

This Page Is Inserted by IFW Operations
and is not a part of the Official Record

BEST AVAILABLE IMAGES

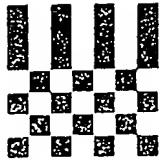
Defective images within this document are accurate representations of the original documents submitted by the applicant.

Defects in the images may include (but are not limited to):

- BLACK BORDERS
- TEXT CUT OFF AT TOP, BOTTOM OR SIDES
- FADED TEXT
- ILLEGIBLE TEXT
- SKEWED/SLANTED IMAGES
- COLORED PHOTOS
- BLACK OR VERY BLACK AND WHITE DARK PHOTOS
- GRAY SCALE DOCUMENTS

IMAGES ARE BEST AVAILABLE COPY.

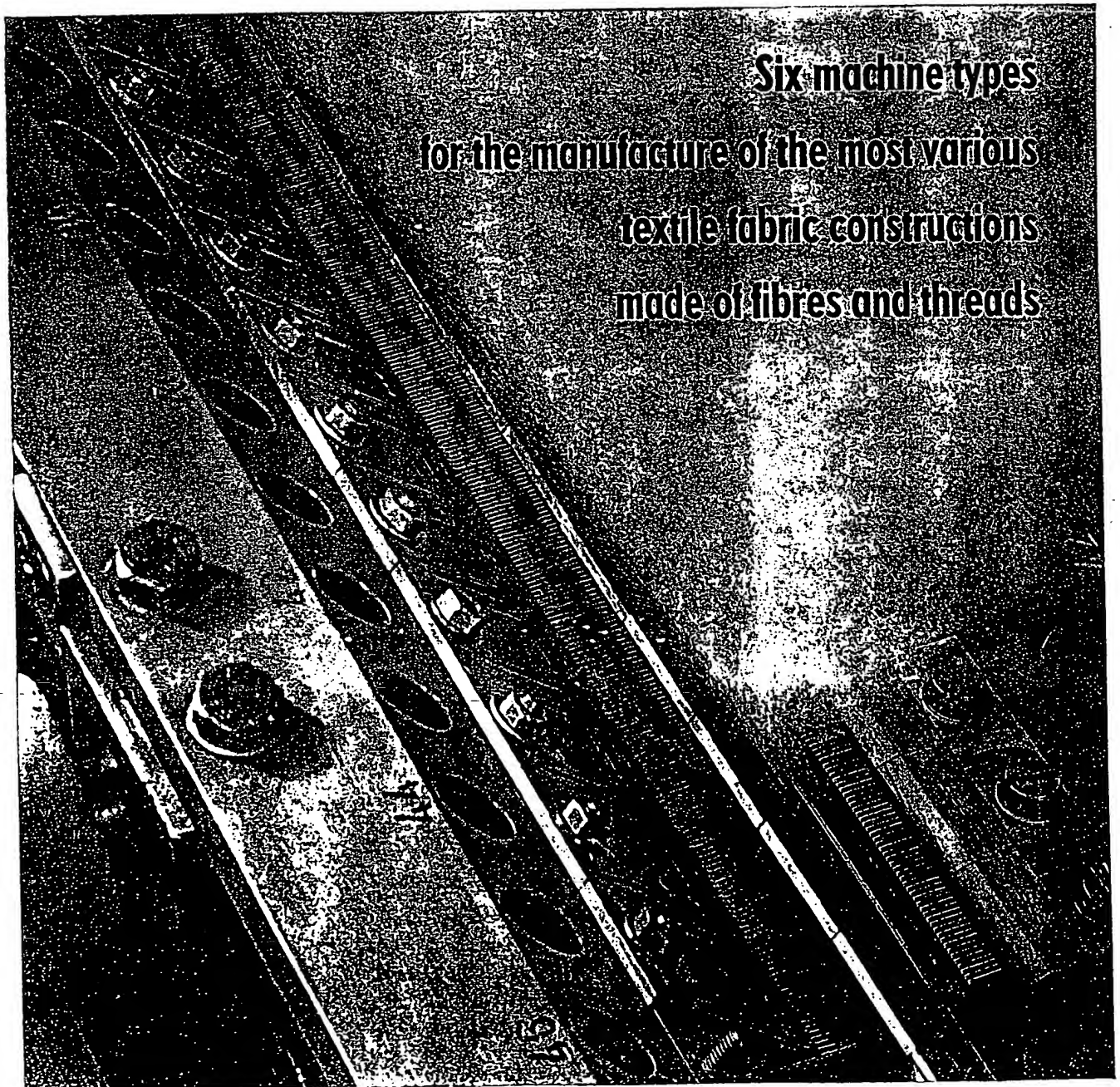
**As rescanning documents *will not* correct images,
please do not report the images to the
Image Problem Mailbox.**



TEXTIMA®

VEB TEXTIMAFORSCHUNG MALIMO
KARL-MARX-STADT
KOMBINAT TEXTIMA

SEWING-KNITTING MACHINES *Malimo®*



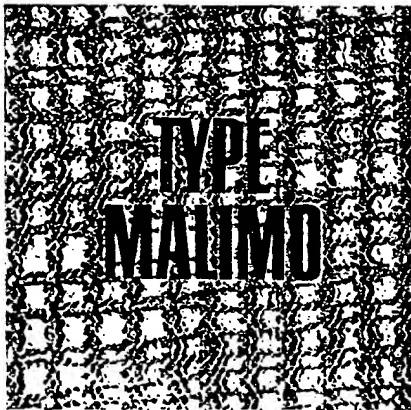
Six machine types
for the manufacture of the most various
textile fabric constructions
made of fibres and threads

What is meant by sewing-knitting?

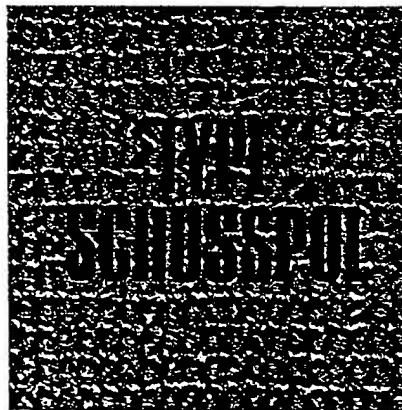
In sewing-knitting (also called stitch-bonding), one or several media are led to the working area where they are pierced by pointed needles that are arranged in a row, work simultaneously, and have got hooks which are temporarily closed for loop formation, to the end of changing the media's properties. The media led to the pointed needles may be threads, sheets of yarn, fibre webs, backing fabrics, or combinations thereof. The pointed needles having closable hooks, are stitching needles that cooperate with individually powered closing wires. These stitching needles permit the piercing of the media and, as compared to other needles, have two advantages: the adjustable opening time of the hook, and the smaller needle stroke. There are two basic possibilities for changing the properties of the medium: direct fabric forming, or modification of the character of the material web presented to the needles.

Malimo®

is the protected trade-mark of
Warenzeichenverband für Nähwirkmaschinen und Nähwikerzeugnisse der DDR – e. V.
Hohenstein-Ernstthal



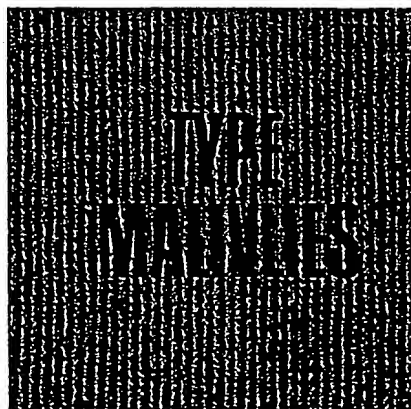
Page 10



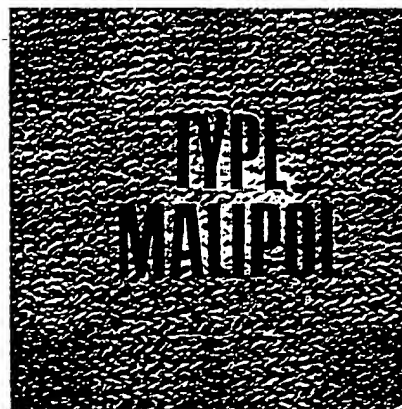
Page 14



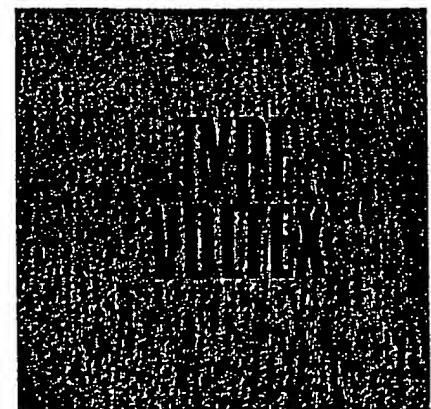
Page 18



Page 22



Page 26



Page 30

FROM THE HISTORY OF THE SEWING-KNITTING TECHNIQUE

1948

The inventor
Heinrich Mauersberger
applies for his first patents –
the basic idea was to
produce fabric
constructions at a sewing
machine's speed

1953

The first
stitch-bonded sample
is presented
to a few experts
of the textile industry



1954

The textile industry
receives the first MALIMO
sewing-knitting machine –
type Maliwatt –
for trial

1957

The first serial machine,
a MALIMO sewing-knitting machine,
type Maliwatt N2400,
is exhibited at
the Leipzig Spring Fair

1959

The textile industry
receives the first MALIMO
sewing-knitting machines –
types Malimo 500
and Malipol 750

1961

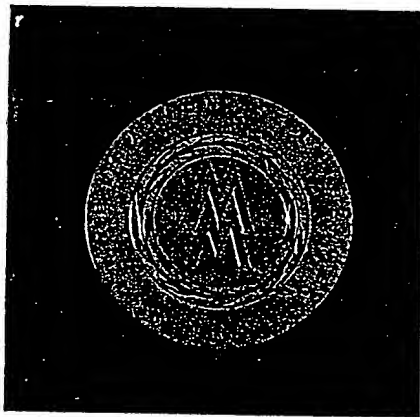
Exhibition
of the first MALIMO
sewing-knitting machine
– type Malimo N1600 –
at the Leipzig Spring Fair
This is the beginning of the large-scale
application of MALIMO machines
in the GDR and in all leading
industrial countries of the world

1963

The MALIMO
sewing-knitting machines —
types Malimo,

Maliwatt and Malipol —
are awarded Gold Medals
at the Leipzig Fair.

Further Gold Medals
of the Leipzig Fair received:
1968 MALIMO — type Malimo 22 F
1969 MALIMO — type Schusspol N2400
1970 Machine system
BEFAMA-MALIMO N2400
1973 Machine system
BEFAMA-MALIMO N3600



1972

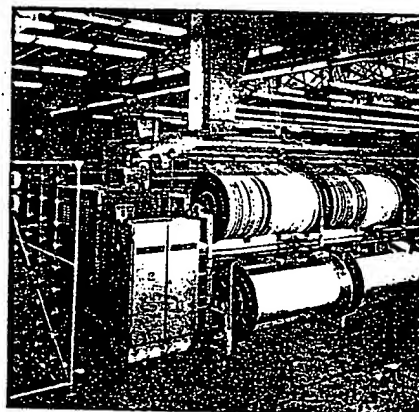
VEB Malitex
Hohenstein-Ernstthal
is equipped with the 1,000th Malimo
sewing-knitting machine

1973

A MALIMO sewing-knitting machine,
type Maliwatt N3600,
forming and integral part of the
BEFAMA-MALIMO machine system
is presented to the visitors
of the Leipzig Autumn Fair.
Delivery of the first series-built
MALIMO sewing-knitting machines —
type Schusspol N3600 —
in the same year

1975

More than 1,000 MALIMO
sewing-knitting machines are
operated in more than 30 countries
of the world including the GDR, USSR,
People's Republic of Bulgaria,
People's Republic of Poland
Great Britain, France,
the Federal Republic of Germany,
U.S.A., Italy, and Japan.
Display of the first MALIMO
sewing-knitting machine —
type Malimo N3600 —
ITMA '75 Exhibition



1976

Delivery
of the first series
of MALIMO sewing-
knitting machines —
type Malimo N3600

The steadily growing need in textiles demands the development and use of highly productive techniques for textile fabric forming. At present, the MALIMO sewing-knitting technique is the most progressive one. It has entered into nearly all fields of textile fabric forming. Nevertheless, its possibilities of application and capacity are not yet fully recognized, nor fully developed and utilized.

Today, the MALIMO sewing-knitting technique is a wellproven production process of textile fabric forming and its application is impressive.

Having infinitely variable speed control ranging from 500 to 1,500 r.p.m., the sewing-knitting machines can be adapted to the most various conditions in production. Their high production outputs, i.e. 70 to 150 metres/hour in the most frequently used stitch lengths, enable them to be linked up to form machine systems

High output, versatile use, minimal space requirement, and high operational comfort permit an economical production on the smallest space and provide short return times of investments.

The versatility of the MALIMO sewing-knitting machine is unprecedented in the history of the manufacture of textile fabrics

The use of the most different materials and the variability of machine gauge and stitch length permit to vary the weight and structure of stitch-bonded fabrics within wide limits.

The weight is of a secondary importance with respect to the output, since fibre webs, backing fabrics, and number of threads per unit area can be selected nearly independently of the stitch length and stitch-bonding speed.

Stitch-bonded fabrics, thanks to their favourable properties and strong loop-like edge, can be further processed on various conventional finishing units. Depending

upon the material and the finishing process used, most different service characteristics can be obtained. Many stitch-bonded articles have typical appearances and are unsurpassed novelties in the textile assortment. They influence fashion and bring about new trends in taste. The versatility of the machines offers any production engineer and designer the possibility to creatively accomplish new ideas.

The MALIMO sewing-knitting technique is universal and highly productive – it is a future-oriented textile technique.

The term of MALIMO stitch-bonded fabrics stands for:

- industrial textiles which are apt to withstand heavy strains.
- fashionable interior decoration fabrics
- hard-wearing household linen
- fashionable outerwear

The construction series of MALIMO sewing-knitting machines manufactured by our enterprise comprises the models 14010 and 14011 –

- the thread layer sewing-knitting machine, type Malimo
- the weft pile sewing-knitting machine, type Schusspol
- the stitch-bonded fibre web sewing-knitting machine, type Maliwatt
- the intermeshed fibre web sewing-knitting machine, type Malivlies
- the pile yarn sewing-knitting machine, type Malipol
- the intermeshed pile-type fibre web sewing-knitting machine, type Voltex

They are constructed according to the unit assembly principle and embody experiences and wishes of our customers as well as the latest findings in textile machine building. Permanent quality inspection in manufacturing the machines ensures an invariably high quality.

According to the present state of art, MALIMO sewing-knitting techniques can be subdivided into three main groups:

Group I:

Sewing-knitting techniques for the manufacture of textile fabrics in which strengthening is achieved by threads. The MALIMO sewing-knitting machines – type Malimo, type Schusspol, and type Maliwatt – are suitable for the application of these techniques.

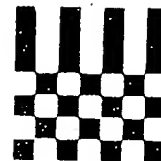
Group II:

Sewing-knitting techniques for the manufacture of textile fabrics without using stitching threads. The MALIMO sewing-knitting machine, type malivlies, is suitable for the application of the technique.

Group III:

Sewing-knitting techniques forming pile loops of threads or fibres and stitching them into prefabricated backing materials. The MALIMO sewing-knitting machines, type Malipol and type Voltex, are suitable for the application of these techniques.

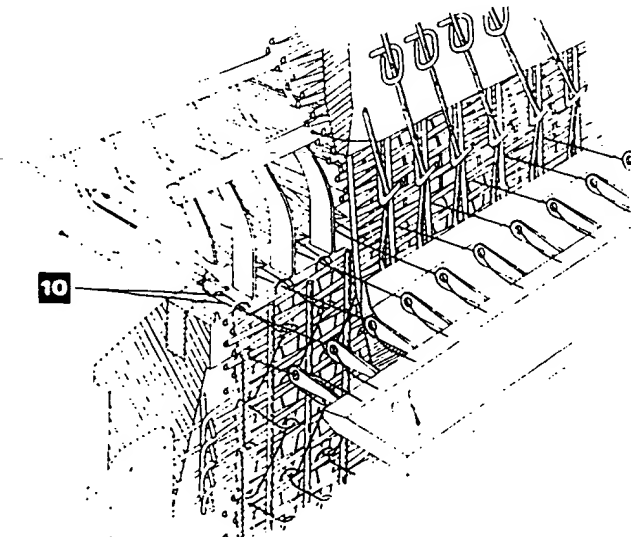
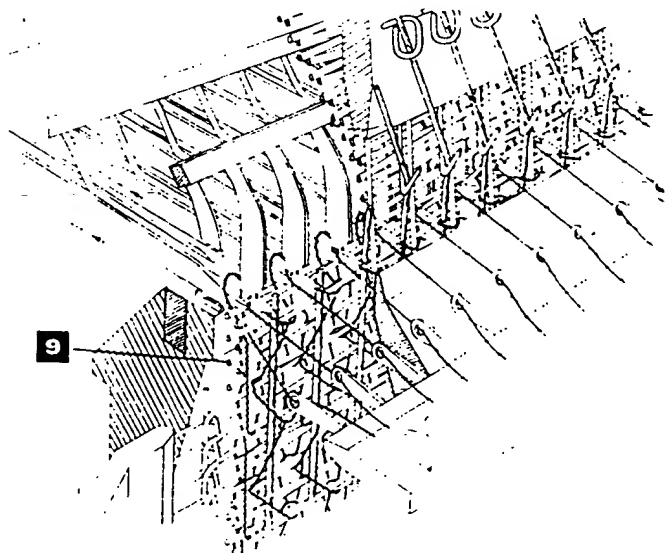
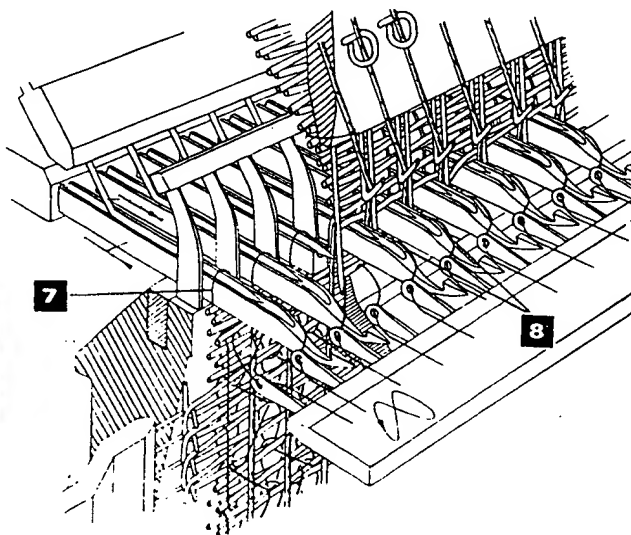
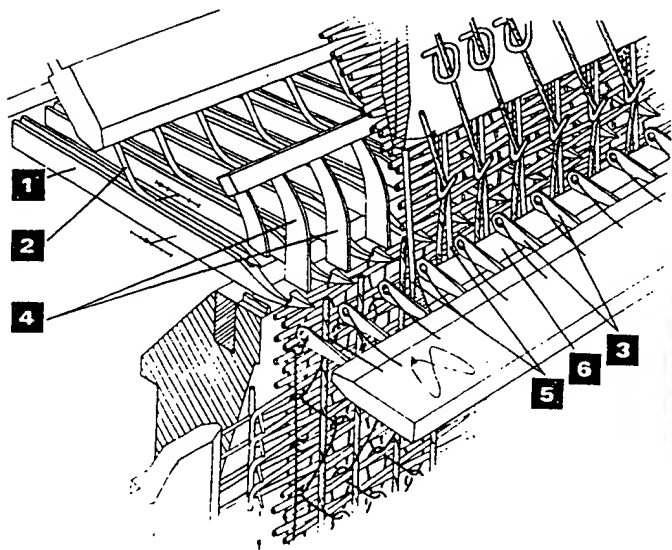
**Example
of the bonding process
in the MALIMO sewing-knitting machine,
type Malimo**



- 1 Stitching needles
- 2 Closing wires
- 3 Stitching yarn guides
- 4 Knocking-over sinkers
- 5 Retaining pins
- 6 Supporting rail
- 7 Stitches of the previous course
- 8 Newly lapped stitching threads
- 9 Weft threads
- 10 New loops

Special stitching needles which, together with the other stitch-bonding elements, effect the stitch-bonding process, were developed for the MALIMO sewing-knitting machines. The stitching needles pierce the sheets of yarn, backing fabrics or fibre webs fed to the needles and guide needles transfer the stitching threads to the hooks of the stitching needles. For loop formation, the hooks are temporarily covered by closing wires. The kinds of stitches interlocking chain stitch or plain chain stitch – known from warp knitting are applied.

If required, a second guide bar can be used. It simultaneously permits plain chain and interlocking chain stitches or plain chain stitch and weft laying.

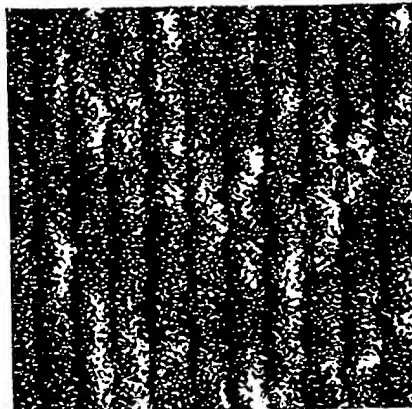
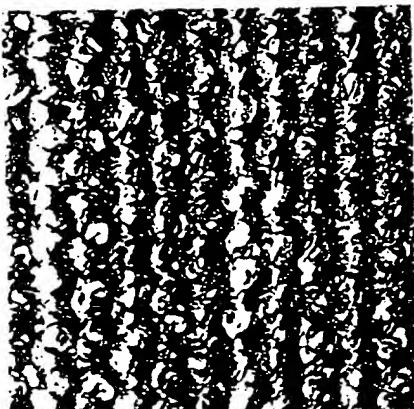
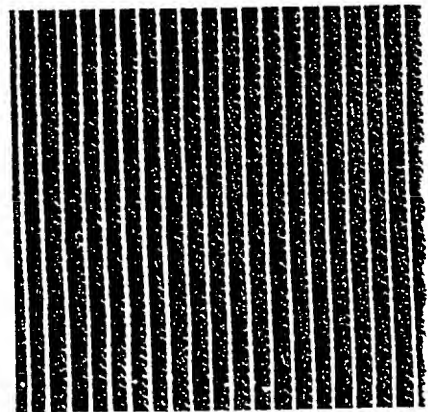
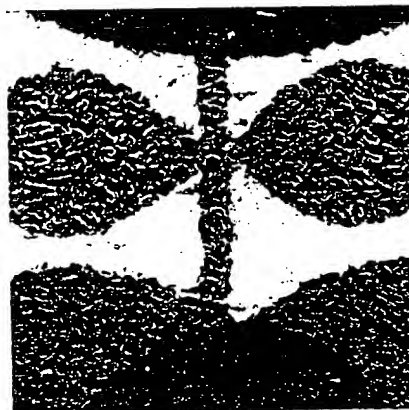
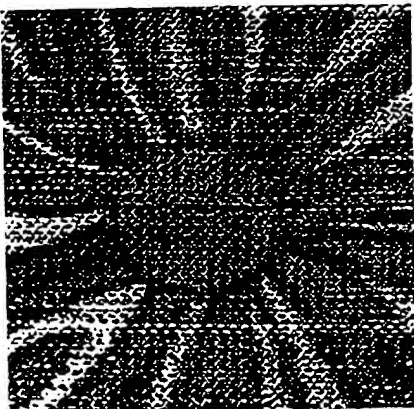
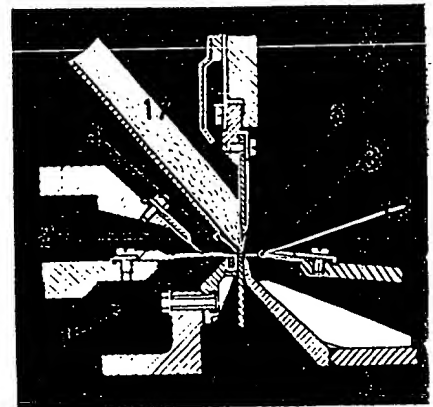
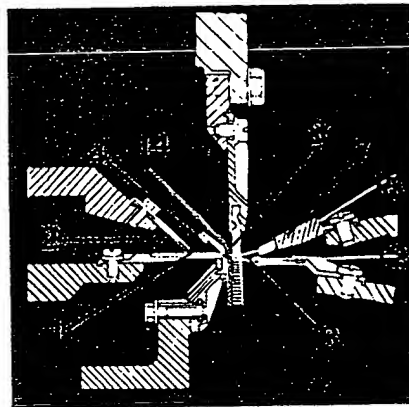
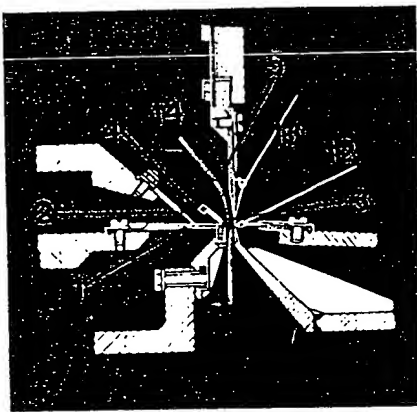


TYPE MALIMO

TYPE SCHUSSPOL

TYPE MALIWATT

- Stitching needle 1
- Closing wire 2
- Stitching yarn guide 3
- Knocking-over sinker 4
- Retaining pin with warp guide 5
- Retaining pin 6
- Pile yarn tubular guide 7
- Pile sinker 8
- Pile yarn guide 9



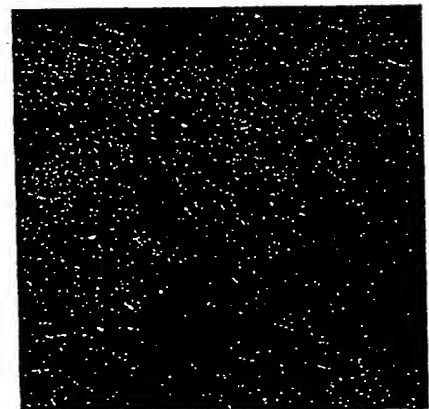
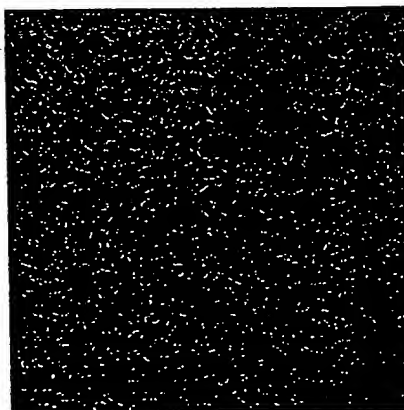
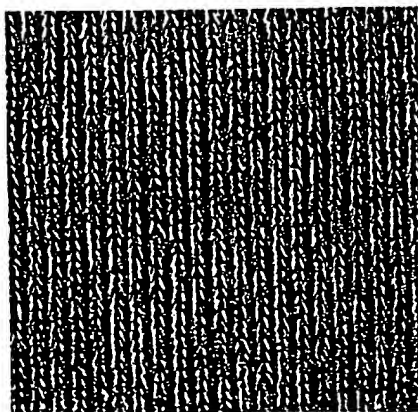
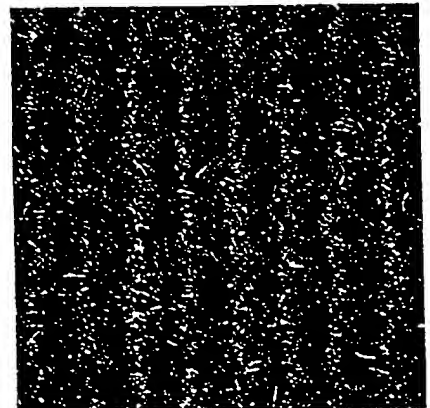
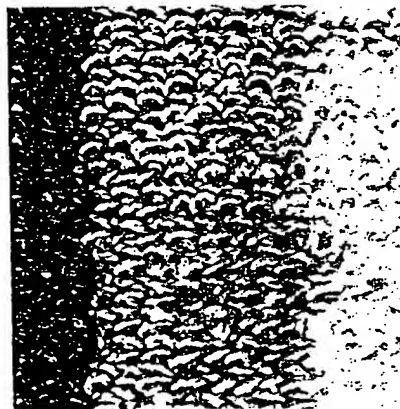
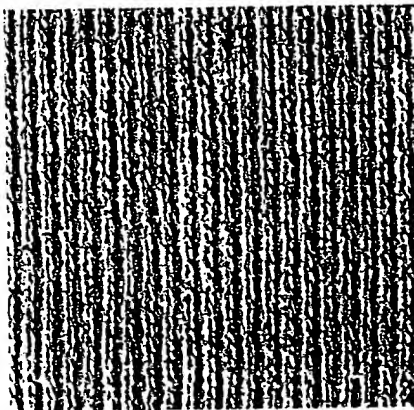
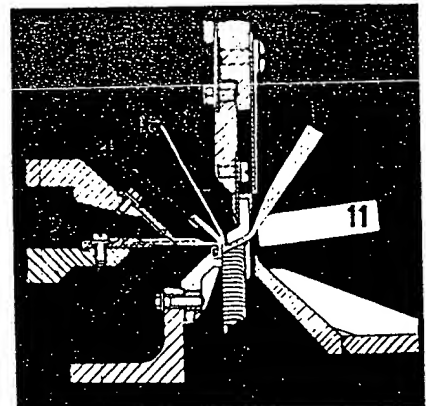
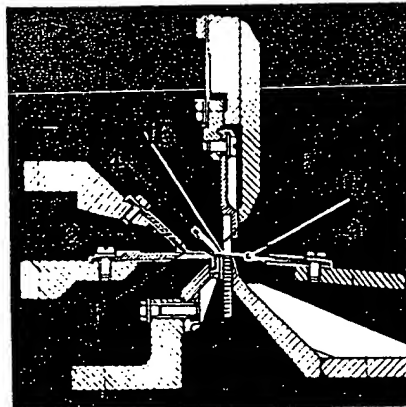
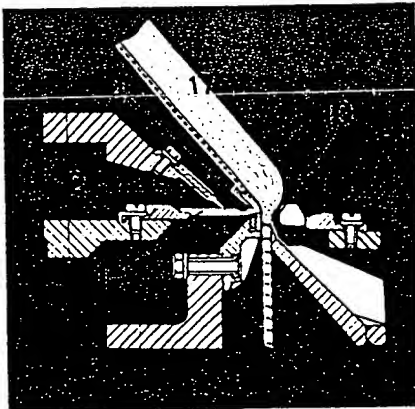
MALIVLIES

MALIPOL

VOLTÈX

- 10 Laying-in sinker
- 11 Voltex attachment
- 12 Stitching thread
- 13 Warp thread
- 14 Weft thread
- 15 Pile thread
- 16 Backing fabric
- 17 Fibre web

Sample – Scale 2 : 1



What will be the further course of development of the MALIMO sewing-knitting technique?

MALIMO is the most progressive textile technique of today and a textile technique of tomorrow.

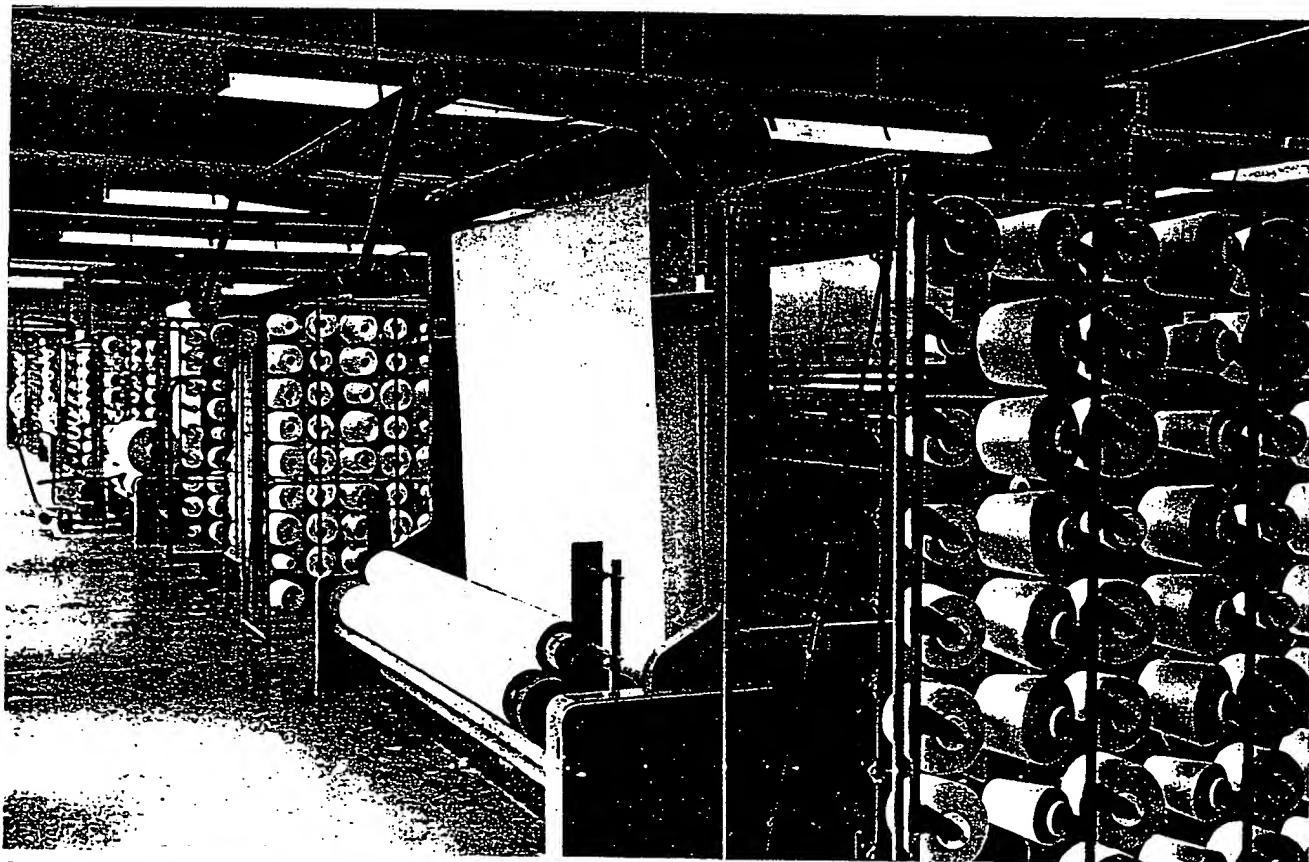
The stage of development and the reliability of the six machine types and of their different ancillary equipment ensure the opening up of many more new fields of application in future.

There are manifold possibilities for further development. This will be obvious from the following examples:

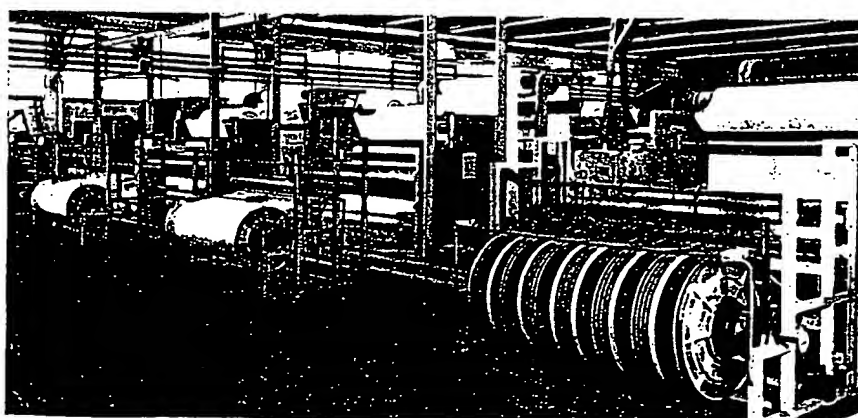
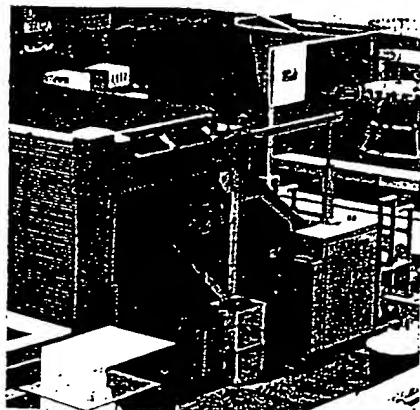
Thanks to the uniform movement of the stitch-bonding elements the increase of the machine speeds is, by far, not yet limited.

- New fields of application are opened up in connection with gauge 22F in the lower weight range for fibre web processing on the MALIMO sewing-knitting machines, types Maliwatt and Malivlies.
- The economic use of 100 per cent fibre material (no threads) guarantee further prospects to the Malivlies technique.

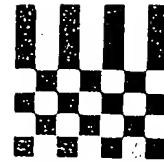
- Special importance is attached to the processing of fibres which present difficulties in spinning or cannot be spun at all.



2

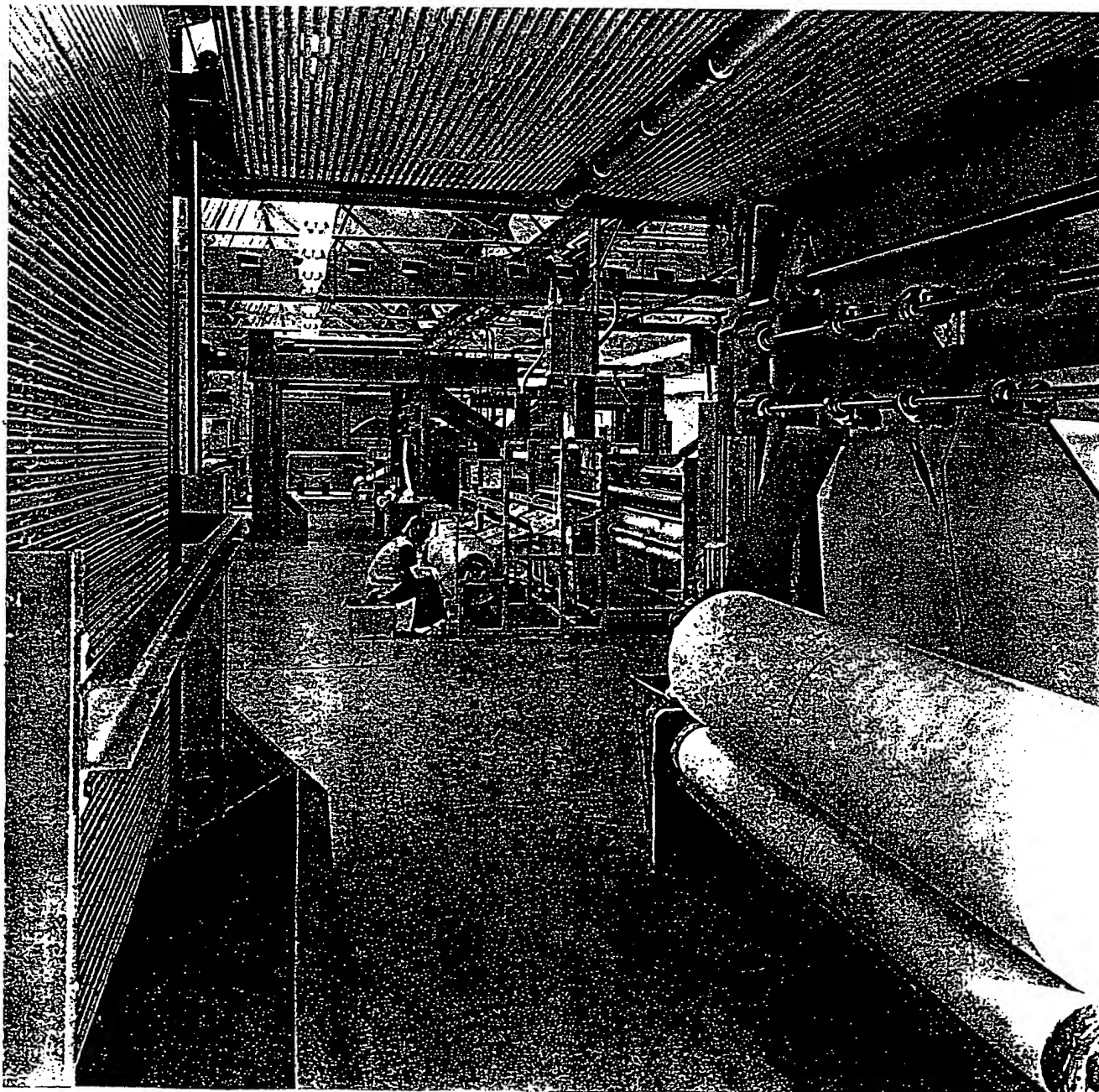


3



- (1) MALIMO sewing-knitting machines, type Malimo N 1600, in the textile industry of the G.D.R.
- (2) MALIMO sewing-knitting machine, type Maliwatt N 2400, in the BEFAMA-MALIMO machine system displayed on the joint Fair stand of the TEXTIMA enterprises, rewarded with the Gold Medal of the Leipzig Fair.
- (3) MALIMO sewing-knitting machines, type Malipol N 1600, in the textile industry of the G.D.R.
- (4) BEFAMA-MALIMO machine system, type Maliwatt N 2400, in the textile industry of the G.D.R.

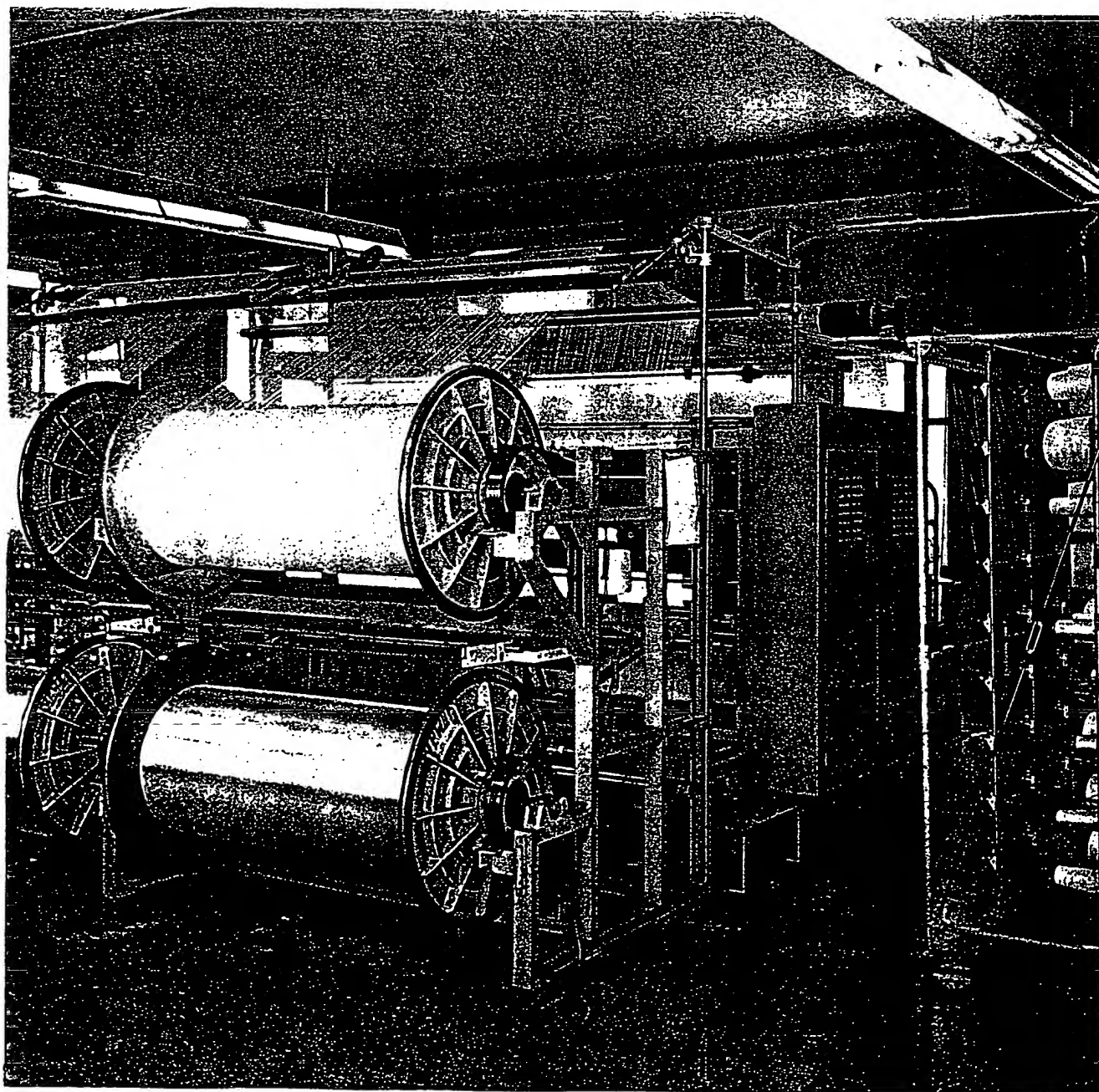
4

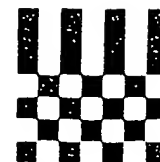


SEWING-KNITTING MACHINE

Malimo®

type Malimo N2400





The stitching and warp threads are fed to the machine from warp beams having flange diameters of 600 or 800 mm, or from sectional beams. In case of smaller machine gauges, the threads can be directly processed from a creel. A steplessly variable stitching yarn feeding device ensures optimum conditions for thread feeding.

The weft threads are processed from bobbins. Magazinetype creels arranged to the left and right of the machine are designed to hold the wound packages. Three versions of creels are available:

- Standard version for cones; 72 winding-off points per creel; spacing 195 mm
- Special version for stretched filament bobbins; 72 winding-off points; spacing 190 mm
- Special version for large-size bobbins; 21 winding-off points; spacing 270 mm

The advantage of the MALIMO sewing-knitting machine, type Malimo, consists in its variety of possible applications. This advantage led to the development of ancillary equipment, which is supplied together with the machine on the customer's request:

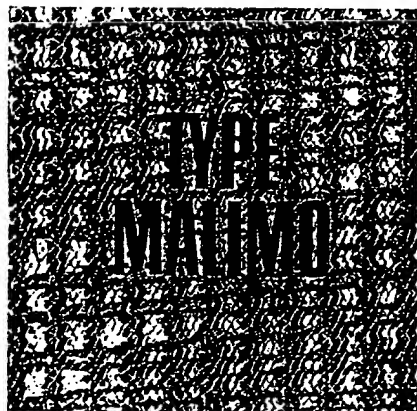
- Separate warp guide bar
- Fabric cutter
- Warp guide bar racking device for nominal widths 1600 and 2400
- Backing fabric feeding device for nominal widths 1600 and 2400
- Warp feeding device.

The MALIMO sewing-knitting machine, type Malimo, permits the production of stitch-bonded fabrics in a great variety and for different applications:

Industrial textiles

- Interlining fabrics for conveyor belts
- Packing materials
- Coating substrates for tarpaulin materials and inflatable halls
- Coating substrates for fancy goods
- Interlinings for laminates

- Decoration fabrics and household textiles
 - Decoration fabrics
 - Semi-sheers draperies
 - Upholstery fabrics
 - Wall cloths
- Utility fabrics and household linen
 - Cleaning cloths
 - Towels and dishtowels
 - Bed sheets
 - Table linen
 - Multi-purpose cloths
- Garment textiles
 - Blouse fabrics, dress materials and shirtings
 - Costume fabrics and trouserings
 - Materials for beach wear, bathing wear and leisure-time wear
 - Materials for children's wear
 - Materials similar to cord (pile cord)

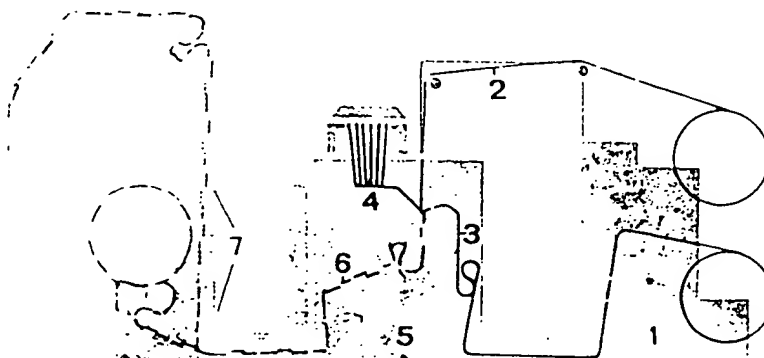


The MALIMO sewing-knitting machine, type Malimo, is used for the production of fabrics made of sheets of yarn. As a rule two sheets of yarn placed loosely one above the other, i.e., the warp threads and the weft threads, are interlaced by means of stitching threads to form a textile fabric construction. However, articles consisting of weft and stitching threads only, can also be produced.

The fabrics produced on the MALIMO sewing-knitting machines, type Malimo, can consist of plain or textured continuous filament weighing 80-90 g/m², or of spun yarns and effect yarns weighing up to 700 g/m², dependent on the machine gauge.

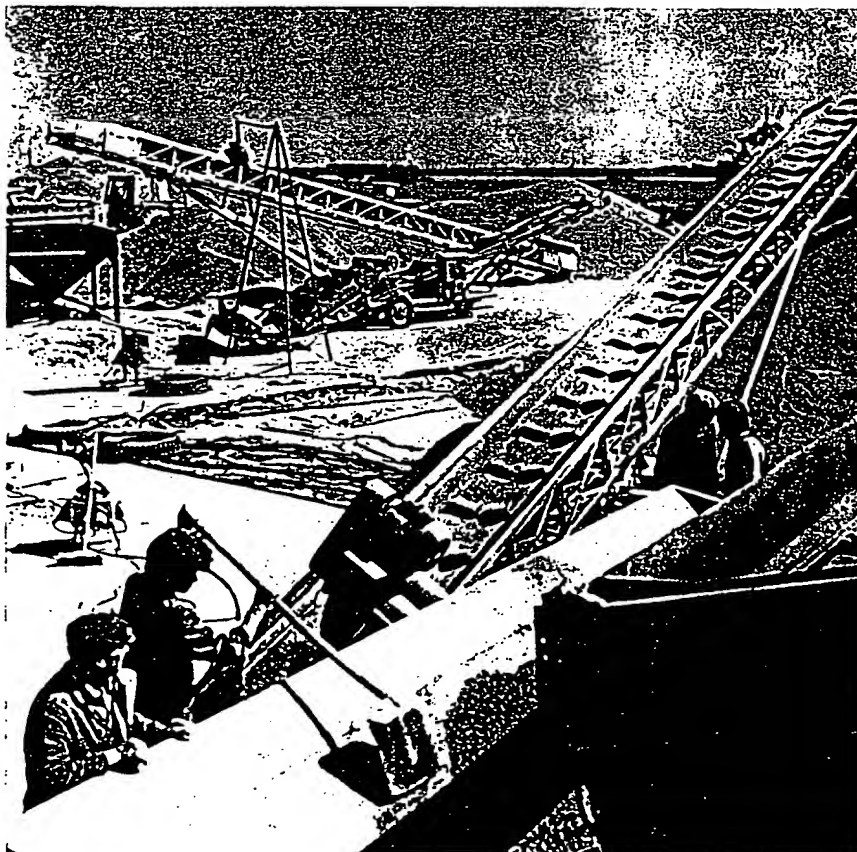
Diagram of fabric passage
MALIMO sewing-knitting machine,
type Malimo

- 1 Warp beam stand
- 2 Warp threads
- 3 Stitching threads
- 4 Weft threads
- 5 Sewing-knitting machine
- 6 Stitch-bonded fabric made of sheets of yarn
- 7 Fabric plaiter designed as winding-up or fabric plaiting mechanism



Examples for the application
of MALIMO sewing-knitting machines,
type MALIMO,
and performance parameters that can be obtained

Article	Machine Stitch range F length, mm		Stitching thread (tex)	Warp thread (tex)	Weft thread (tex)	Weight, g m ²	Speed r.p.m.	Actual output m/h
Blouse fabrics and dress materials	22	0.55	7.6 PE-S	—	15 PE-S-I-DV	90	1200	30
Coating substrates for tarpaulins and inflatable halls	18	1.8	28 PA-S-Lt	94 PA-S-kt	76 PA-S-kt	290	1000	85
Decoration fabrics	14	1.4	8.4 PE-S	125 VI-S-t	140 VI-F	110	1000	50
Pull transmitting interlinings for conveyor belts	9	2.75	76 PA-S-kt	64×4 PA-S-kt threefold	188 PA-S-kt	900	800	70
Upholstery fabrics	7	2.0	21×2 PAN-F	900 VI-F Effect twist	140 VI-F	450	700	65



Technical data
of the
MALIMO sewing-knitting machine,
type Malimo

Nominal width N	1600	2400	3600
Model	14010		14011
Maximum working width, mm	1625	2425	3600
Minimum working width, mm	1050	1650	2450
Gauge F (needles per 25 mm)	3.5 ... 22 F at N 3600 up to 18 F		
Range of stitch lengths, mm, adjustable in steps	0.7 ... 5.0 at gauge 22 F 0.55 ... 2.0		
Speed range, min ⁻¹ , infinitely variable	500 ... 1500		850 ... 1100
Net space requirement, m ²	33	38	55
Connected load, kVA	4,5	6	16

Gauge F	Stitching thread	Warp thread	Weft thread
7	100 (10)	2000 (0,5)	200 (5)
14	72 (14)	250 (4)	125 (8)
18	30 (34)	72 (14)	50 (20)
22	20 (50)	25 (40)	25 (40)

Recommended values concerning
coarsest material that can be
processed in dependence upon the
machine gauges
tex (Nm))

Gauge F	Weight
7	250-800
14	200-400
18	150-280
22	100-200

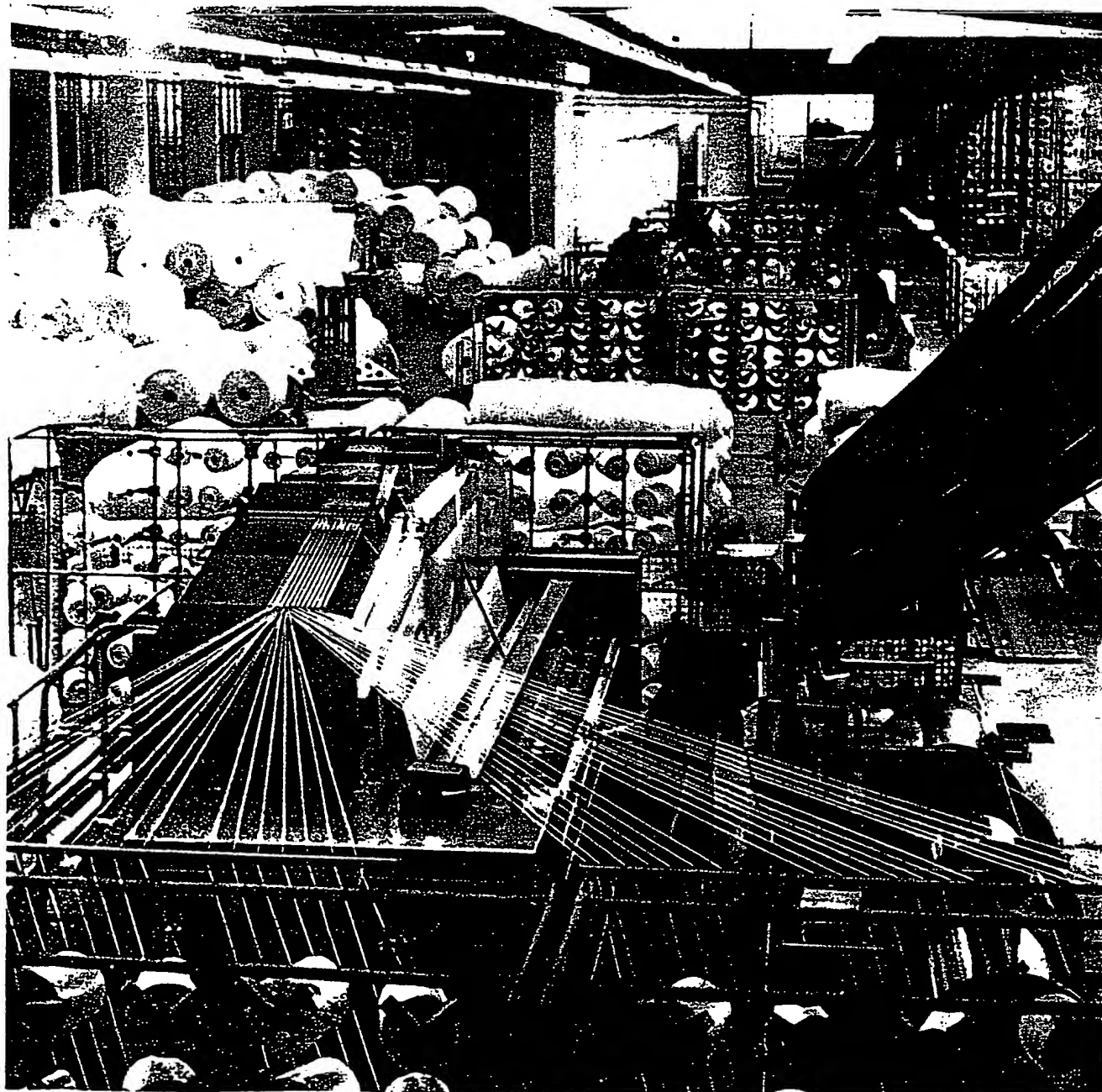
Reducible fabric weights per unit area
with well-closed fabric appearance,
g m²)

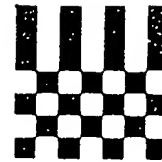


SEWING-KNITTING MACHINE

Malimo®

Type Schusspol N 3600





threads are warped onto warp beams and run off in a beam winding-off stand.

Depending on the space conditions in the user's shop and the production-technological conditions, pile thread creel feeding versions, too, are possible apart from winding the threads off a beam.

The use of creels with tubular yarn guides and magazine creeling provides optimum production conditions. To take up cones or parallel cheeses, the creels are designed as flat or multi-deck constructions and are equipped so that all the pile threads are guided in tubes from the bobbins to the sewing-knitting machine. Thread tension is controlled by means of steplessly variable thread brakes.

The spacing of winding-off points is 610 mm in horizontal direction and 260 mm in vertical direction.

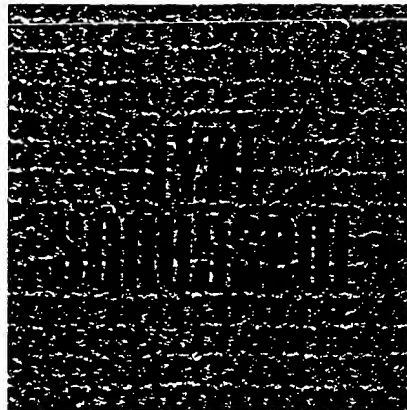
The capacity of the creels can be varied by segmental construction. 126 winding-off points make one creel segment. Each winding-off point has a spare peg to ensure continuously delivery.

For the delivery of the weft threads, coarse-count creel segments comprising 21 winding-off points and being equipped for magazine creeling are arranged alongside of the machine. The spacing of the winding-off points is 270 mm.

Special advantages:

- High output, with good gray goods quality, due to an optimum design of the thread guide elements — they permit the processing of untwisted textured pile yarns and open-end spun yarns.
- High operational comfort through clearly arranged operating, indicating and monitoring devices, steplessly variable speed and rate of delivery for the pile thread and stitching thread systems.
- Compensation of variations in pile thread tension by steplessly variable individual thread brakes mounted to the creel with tubular yarn guides.

- High efficiency through magazine creeling and the use of large-sized pile and filling thread packages. Apart from stitching thread beam changes no technologically conditioned idle times.
- Electronic yarn stop motions together with optical display — for all the thread systems.
- High uniformity and number of tufts per unit area of the pile face ensure good power of recovery of the tufts. All demands placed on textile floor coverings are met.
- In print designing, the tight surface that is so characteristic for this kind of technology, brings about excellently sharp contours.



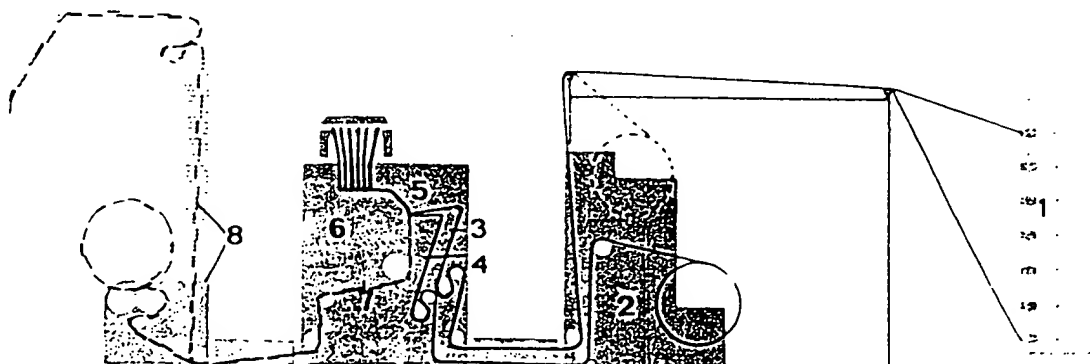
The MALIMO sewing-knitting machine, type Schusspol, serves to manufacture one-sided pile fabrics, especially floor covering made of synthetic pile materials, as well as of terry fabrics and upholstery fabrics.

The stitching threads interlace the pile threads lapped over pile sinkers by means of a second guide bar, with the heat of weft yarn in plain chain stitching. The lapping of the pile threads is done as weft laying under two needle spacings. In this procedure the high-grade pile thread material appears merely on the face of the stitch-bonded fabric.

Since the pile threads are sewn to the weft threads fed to the stitching-area, no backing fabric is required. The stitching

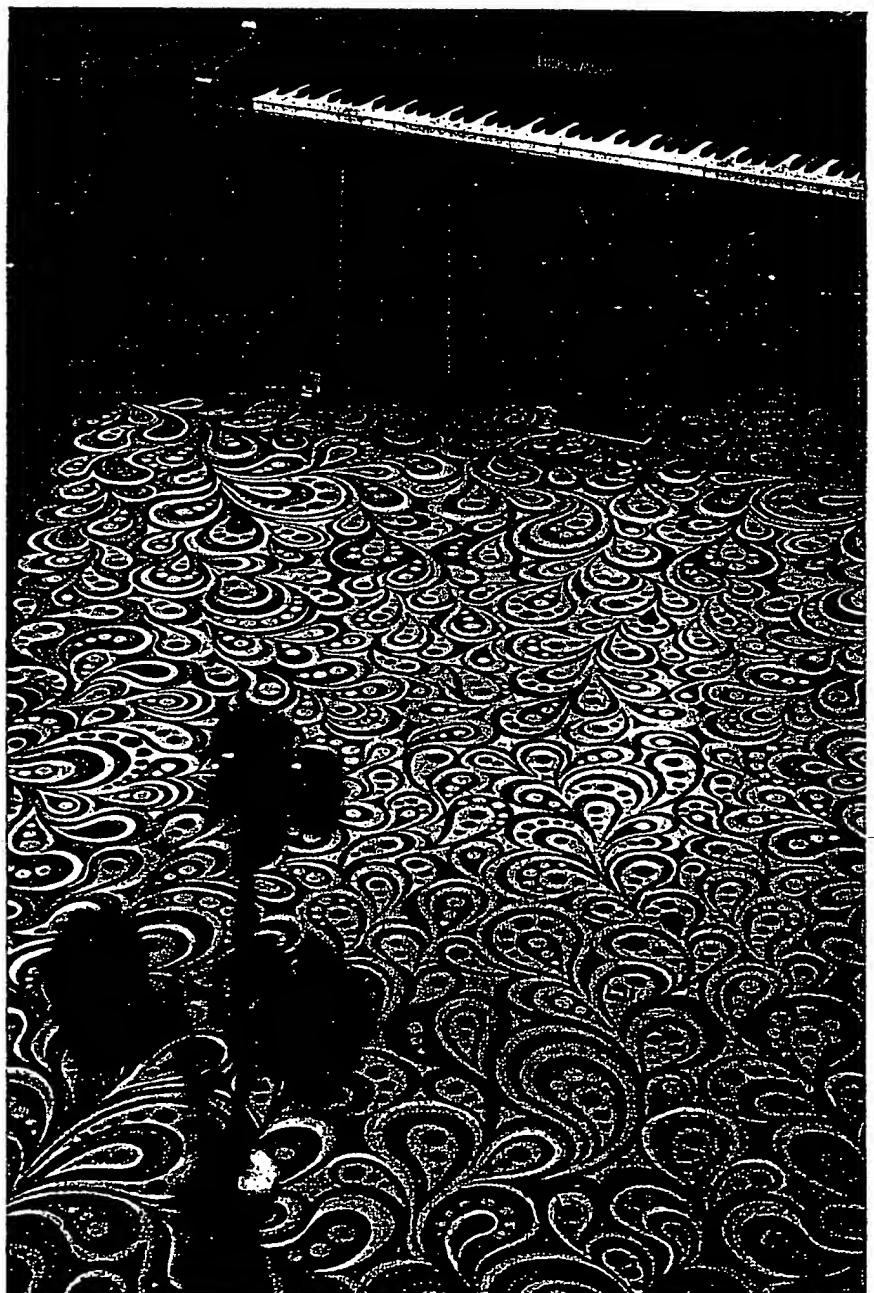
Diagram of fabric passage
MALIMO sewing-knitting machine,
type Schusspol

- 1 Creel with tubular yarn guides
- 2 Beam stand
- 3 Pile threads
- 4 Stitching threads
- 5 Weft threads
- 6 Sewing-knitting machine
- 7 Schusspol stitch-bonded fabric
- 8 Fabric winding-up or plaiting mechanism



Examples for the applications
of MALIMO sewing-knitting machines,
type Schusspol,
performance parameters that can be obtained

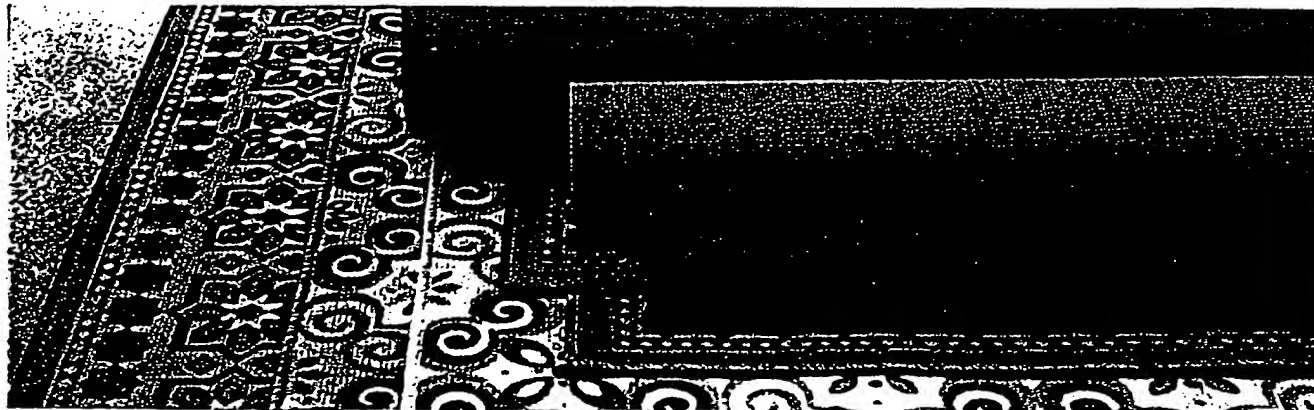
Article	Gauge F	Stitch length, mm	Pile sinker height, mm	Stitching thread, tex	Pile thread, tex	Wefit thread tex	Weight g m ²	Speed r.p.m.	Actual output, m/h
Floor coverings	5	2.75	5	92 PA-S-kt	170 x 2 PA-S-t	300 VI-F-jt	850	550	55
Floor coverings and printed carpets	7	2.5	7	92 PA-S-kt	170 x 2 PA-S-t	140 Paper yarn	850	550	50
Decoration fabrics	10	1.4	4	17 PE-S	30 Cotton	30 Cotton	215	700	40



**Technical data
of the
MALIMO sewing-knitting machine,
type Schusspol**

Nominal width N	1600	2400	3600
Model	14010		14011
Maximum working width, mm	1625	2425	3600
Minimum working width, mm	1050	1650	2450
Gauge F, needles per 25 mm	5, 7, 10		5, 7
Range of stitch lengths, mm adjustable in steps	0.7-5.0		0.55-5.0
Pile, sinker heights, mm	1, 2, 3, 4, 5, 7		

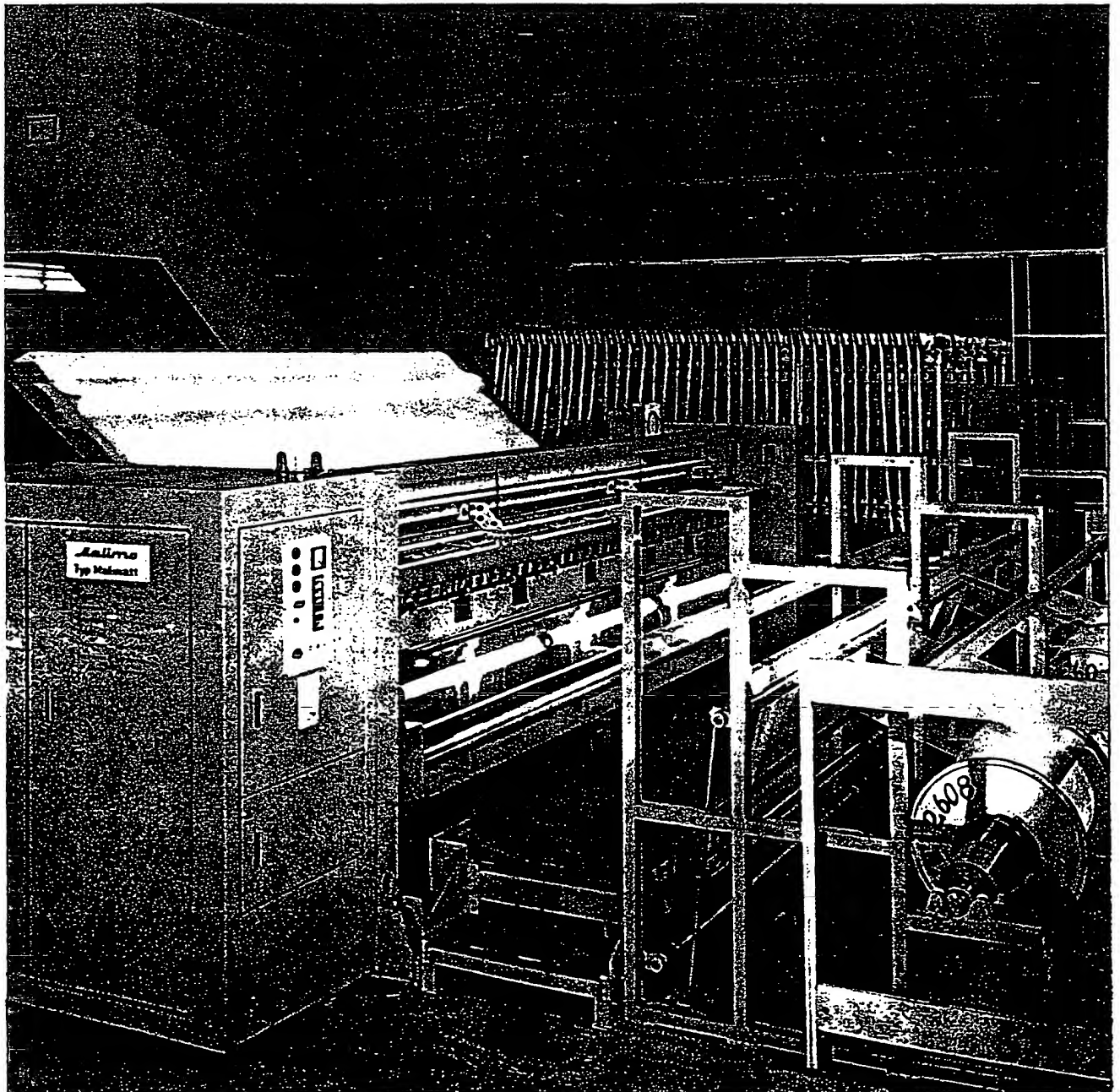
Speed range, min ⁻¹ , infinitely variable	250-700		350-600	
Net space requirement, m ² with beam stand	33	38	55	
with flat creel	-	140	140	
with multi-deck creel		-	110	
Connected load, kVA	4.5	6	13	
Recommended values concerning coarsest processible materials, in dependence upon machine gauges, (tex [Nm])	Gauge	Stitching thread	Pile thread	Weft thread
	5 F	100 (10)	340 (3)	300 (3.3)
	7 F	100 (10)	340 (3)	300 (3.3)
	10 F	34 (30)	125 (8)	125 (8)
Weights per unit area, g m ²	5 F 7 F	800-1000 for floor coverings		
	10 F	200-400 for decoration and upholstery fabrics		

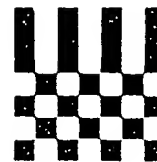


SEWING-KNITTING MACHINE

Malimo®

type Maliwatt N2400





for decoration purposes and for the fabric processing industry can be produced.

In the Maliwatt stitch bonding technique, cross laid webs or random laid webs are stitch-bonded by means of stitching threads. This can be done both discontinuously – by means of prefabricated laps – and continuously, i.e. in a complete machine system.

The BEFAMA-MALIMO machine systems, type Maliwatt, have stood their test very well. Card sets and fibre web formers of other manufacturers, however, can be used too.

The integration of the sewing-knitting machine in a machine system has the following advantages.

- Higher output through continuous web feeding
- Improvement of the finished product quality, since web joints are avoided.
- Less thread breakages
- Reduction of material handling
- Reduction of storage area
- Saving of manpower
- Production of fabrics with low weights.

Because of their outstanding performance parameters, MALIMO sewing-knitting machines, type Maliwatt, should preferably be used in machine systems, if an enterprise envisages rationalization.

The following facilities guarantee the reliability in service of the machinery:

- System control
- Electronic thread breakage detection devices
- Stepless electric speed variation
- Steplessly variable yarn and web feeding rates
- Clearly arranged controls, monitoring, and display instruments

- Edge trimming and tearing device for web edges.

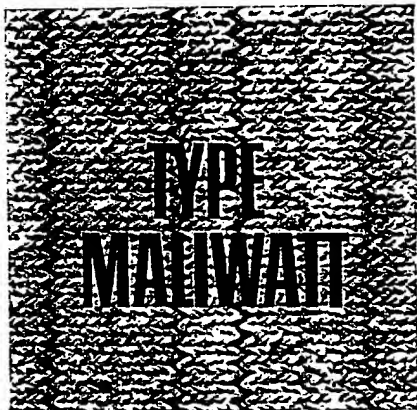
Due to the variability of working width, machine gauge, stitch length, web weight per unit area, fibrous material, and stitching thread material, stitch-bonded fabrics with the most different textile properties can be produced economically. These stitch-bonded fabrics distinguish themselves by natural fleeciness and good heat retention. They can be dyed, printed, impregnated, and coated.

Main applications are:

- Decoration fabrics and wall coverings
- Dress materials and blouse fabrics
- Interlinings for garment, shoe-making, and upholstering industries
- Floor cloths, dishcloths, and dusters
- Babies' napkins
- Coating substrates for fancy goods and window blind materials
- Linings for sound deadening and thermal insulations
- Backings for wall-to-wall carpets and floor coverings
- Substrates for PVC floor coverings
- Packaging materials

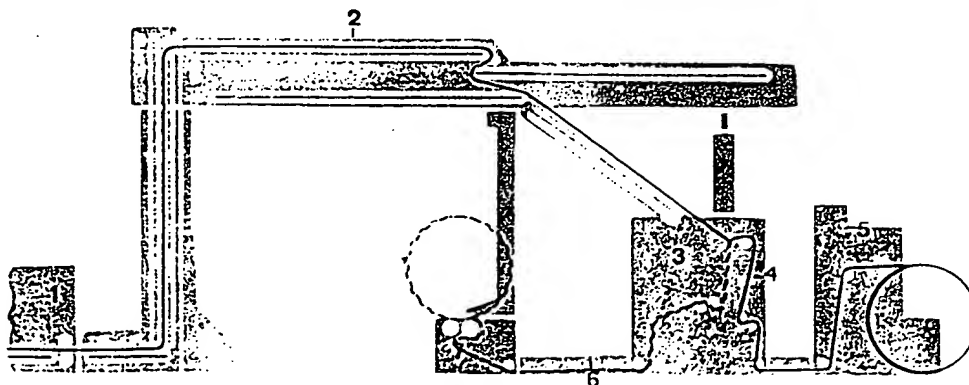
Diagram of fabric passage
MALIMO sewing-knitting machine,
type Maliwatt

- 1 Fibre web former
- 2 Fibre web transfer and compensation device
- 3 Sewing-knitting machine
- 4 Stitching thread
- 5 Beam stand
- 6 Stitch-bonded Maliwatt fabric
- 7 Fabric winding-up mechanism



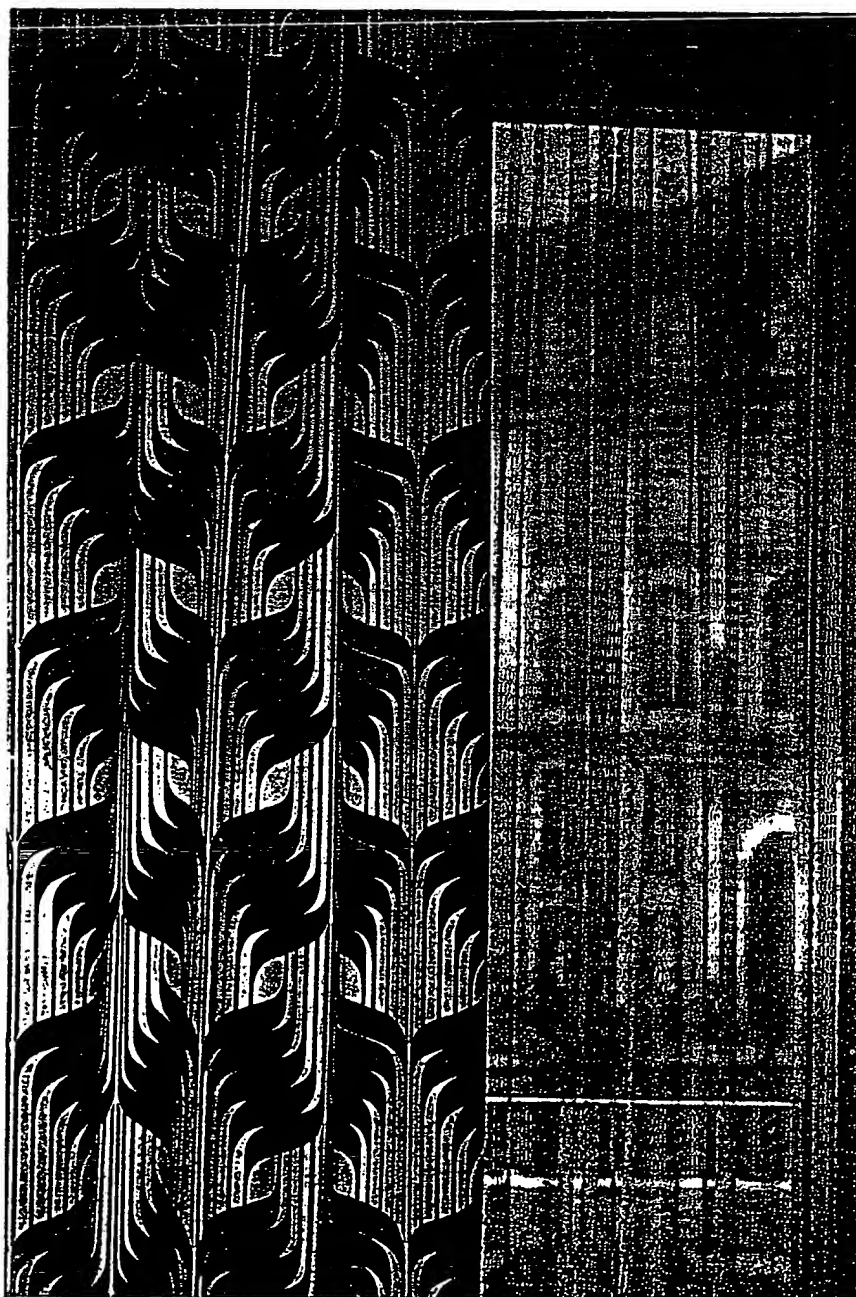
Maliwatt fabrics are produced by over-stitching loose fibre webs. The manufacture of threads including operations such as drawing, roving, and fine spinning, is dropped for the greatest weight proportion of the stitch-bonded fabric. The fibre web is fed to the stitch-bonding area either from a prepared lap or directly from the fibre web former means of a conveying mechanism; there it is stitch-bonded by means of the stitching threads in interlocking or plain chain stitch.

Loose rows of stitches similar to quilt stitch are sufficient, for instance, for interlinings, insulating mats, all coverings, and coating substrates. In the fine gauge range from 14 F onward, mainly light-weight and tighter stitch-bonded fabrics



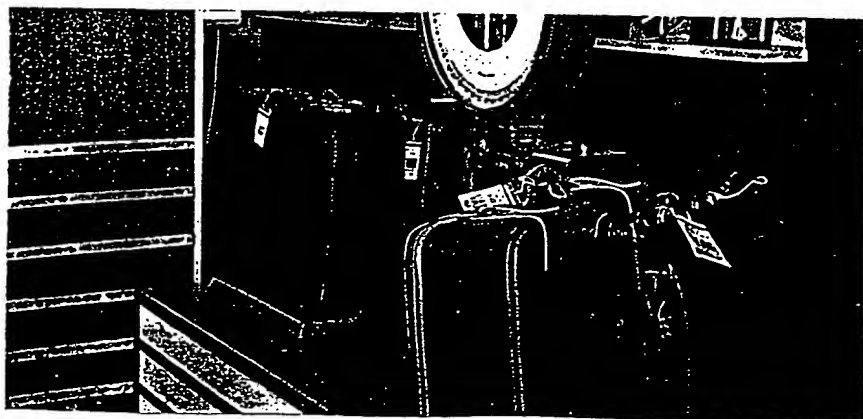
Examples for the application
of the MALIMO sewing-knitting machine,
type Maliwatt,
and performance parameters that can be obtained

Article	Gauge F	Stitch length, mm	Stitching thread, tex	Fibre web	Weight, g m ²	Speed, r.p.m.	Actual output m/h
Coating substrates for novelties	22	0.7	4.4 PA-S	VI-F-wt	120	1400	50
Decoration fabrics	14	0.9	8.4 PE-S	VI-F-wt	140	1400	55
Cleaning cloths	7	2.5	12 x 2 Cotton	55 % VI-F 45 % cotton and cotton waste	315	1100	105
Quilted mats	3.5	4.0	50 VI-F	Glass fibre web	1600	700	100



**Technical data
of the
MALIMO s wing-knitting machine,
type Maliwatt**

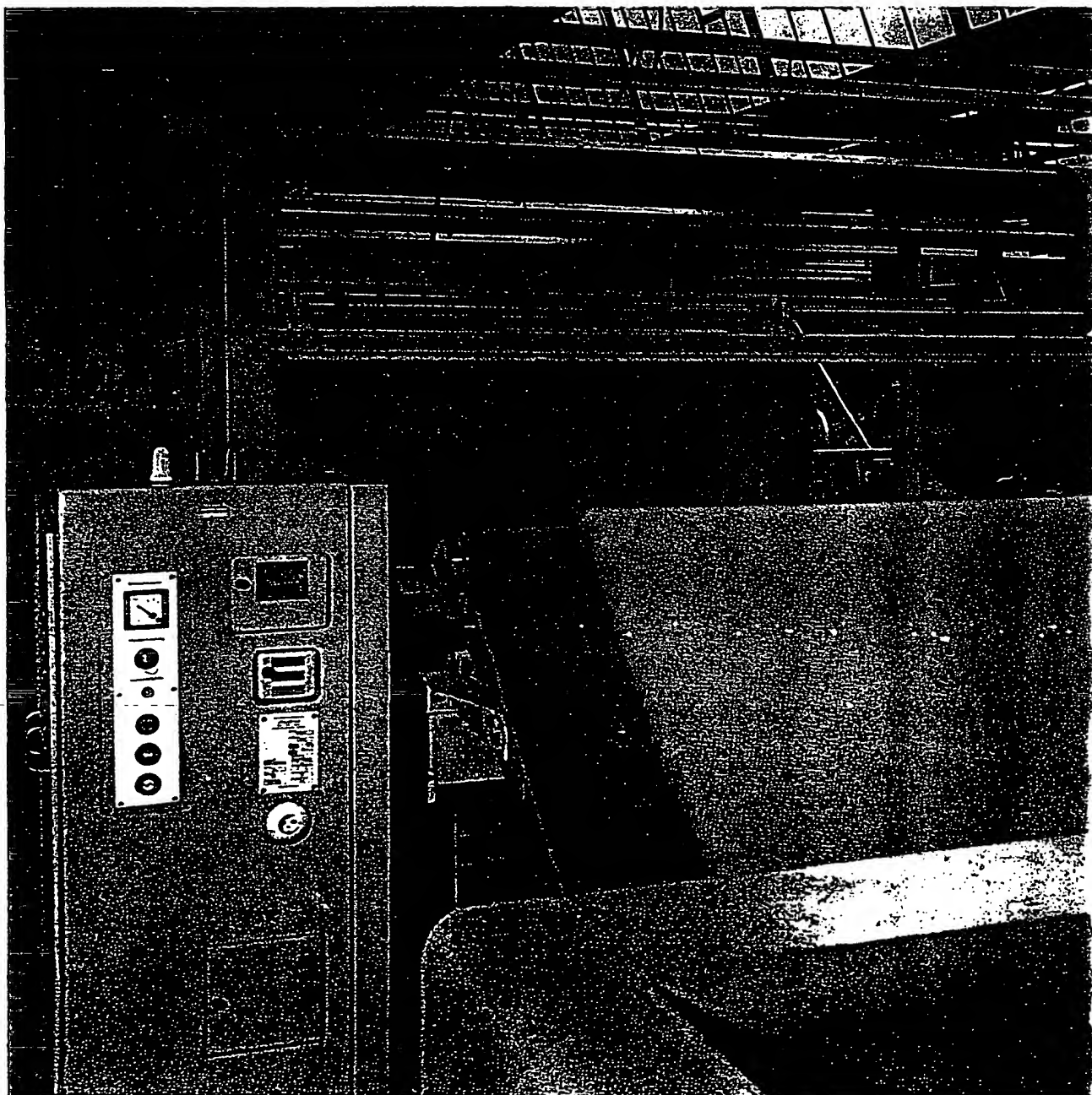
Nominal width N	2400	3600
Model	14010	14011
Maximum working width, mm	2500	3700
Minimum working width, mm	Variable at choice	
Gauge F (needles per 25 mm)	3.5 ... 22	
Range of stitch lengths, mm	3.5-14 F = 0.7-5.0 18-22 F = 0.55-2.0	
Speed range, min ⁻¹ , infinitely variable	500-1500	750-1500
Net space requirement, m ² individual machine (together with beam stand)	25	40
Machine system (one card set)	approx. 120	approx. 140
Connected load, kVA (without card set)	6	15
Recommended values concerning coarsest processible stitching thread materials, in dependence upon machine gauges; (tex [Nm])	Gauge	Titre
	3.5 F	100 (10)
	14 F	30 (34)
	22 F	17 (60)
	Gauge	Weight
	3.5 F	200-500 with glass fibres up to 1600
Producible weights, g/m ²	14 F	150-300
	22 F	100-160

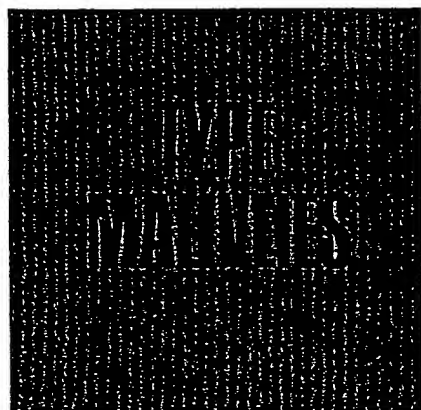
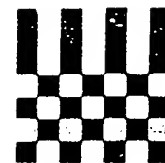


SEWING-KNITTING MACHINE

Malimo®

type Malivlies N2400





The Malivlies sewing-knitting technique is one of the most important procedures for the manufacture of textile fabrics without using yarn or other materials for bonding.

Loops are formed of fibres from the fibre web fed to the stitching area. These loops impart good mechanical strength to the web.

In order to achieve a high degree of interlacing, webs with random and cross-laid fibres are preferably used as feed stock. Loop formation is so clear that it is often difficult even for experts to make a difference between fibre web stitch-bonded fabrics without threads and stitch-bonded fabrics with threads included.

According to the machine gauges used

we distinguish between complete, partial, and quilt seam-like interlacing.

In case of 18 F and 22 F gauges intensive interlacing is achieved, the majority of all fibres is transformed into loops. In case of 3.5 F, 7 F, and 10 F quilt seam-like loop formation is obtained: the proportion of web fibres used for loop formation is relatively small.

This direct transformation of the fibre material into a textile fabric suggests the use of production lines. Malivlies machine systems offer all advantages already mentioned with regard to the Maliwatt system.

The detection of applications for the Malivlies technique has just been started. Assortments produced by means of this highly productive technique are the following:

- Coating substrates
- Wall panellings
- Decorative felts
- Packaging materials
- Insulating materials

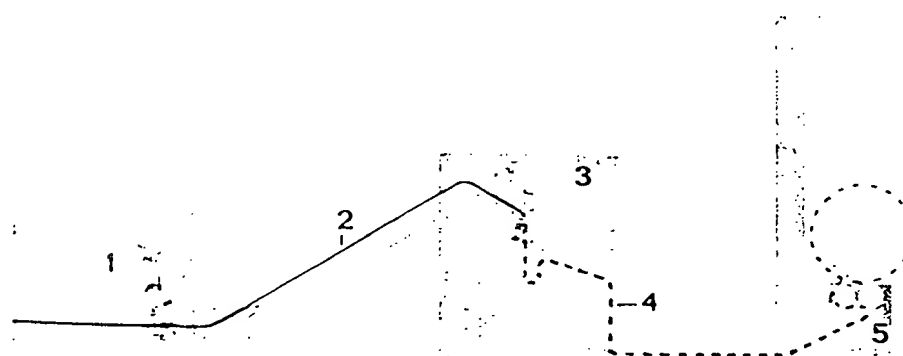
Important advantages arising from the application of the Malivlies technique:

- No use of threads
- Very high outputs at maximum machine speed and few machine down times (no thread breakages)

- Continuous process from the fibre to the stitch-bonded fabric through permanent linkage of fibre web former to the sewing-knitting machine
- Uniform fabric appearance and good interlacing effects through direct feeding of the fibre web
- Low space requirements
- Saving of manpower and energy

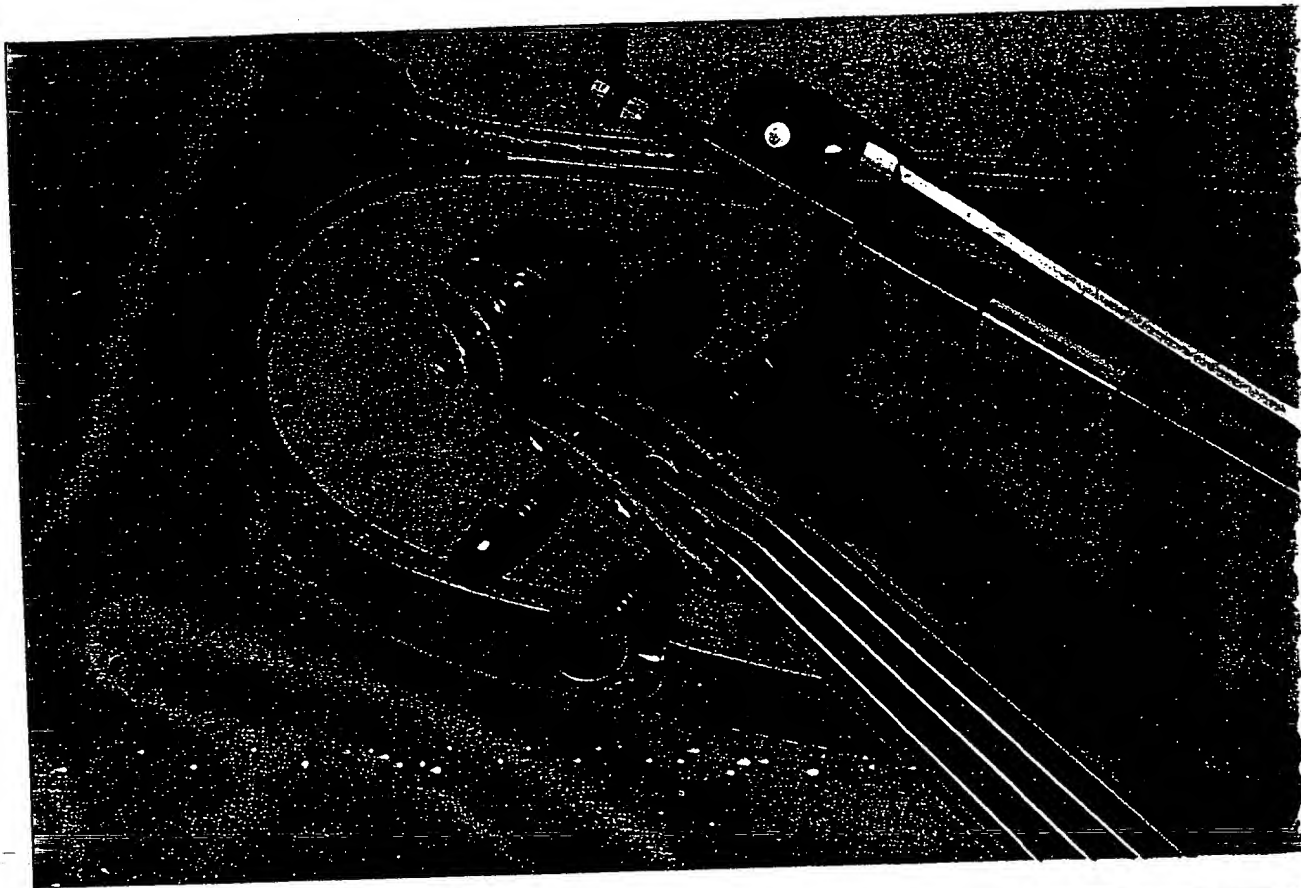
Diagram of fabric passage MALIMO sewing-knitting machine, type Malivlies

- 1 Fibre web former
- 2 Web transfer
- 3 Sewing-knitting machine
- 4 Malivlies fabric
- 5 Fabric winding-up mechanism



Examples for the application
of MALIMO sewing-knitting machines,
type Malivlies,
and performance parameters that can be obtained

Article	Machine gauge F	Stitch length, mm	Fibre web material	Weight, g m ²	Speed, r.p.m.	Actual output, m ² /h
Base fabric for Voltex blankets	22	1.0	PE-F/PAN-F	170	1100	45
Decorative felt	18	1.0	VI-F	250	1200	50
Packing material	7	2.0	Reclaimed textile fibre	260	1200	100
Weldable interlining	3.5	1.1	PA-F	200	1300	80



**Technical data
of the
MALIMO sewing-knitting machine,
type Malivlies**

Nominal width N	2400	3600
Model	14010	14011
Maximum working width, mm	2500	3700
Minimum working width, mm	selectable at will	
Gauge F, needles per 25 mm	3.5 ... 22	
Range of stitch lengths, mm — adjustable in steps	3.5–14 F = 0.7–5.0 18–22 F = 0.55–2.0	

Speed range, min⁻¹, infinitely variable

Net space requirement, m²
individual machine

machine system (one card set)

Connected load, kVA (without card set)

Processible fibre materials

500–1500	750–1500
16	25
approx. 100	approx. 125
6	16

Synthetic and natural fibres, reclaimed textile fibres as well as their blends 0.34–0.88 tex (3–8 denier), staple length: 60–120 mm depending upon gauge and web preparation

Producible weights,
g/m²

Gauge

Weight

3.5 F

160–600

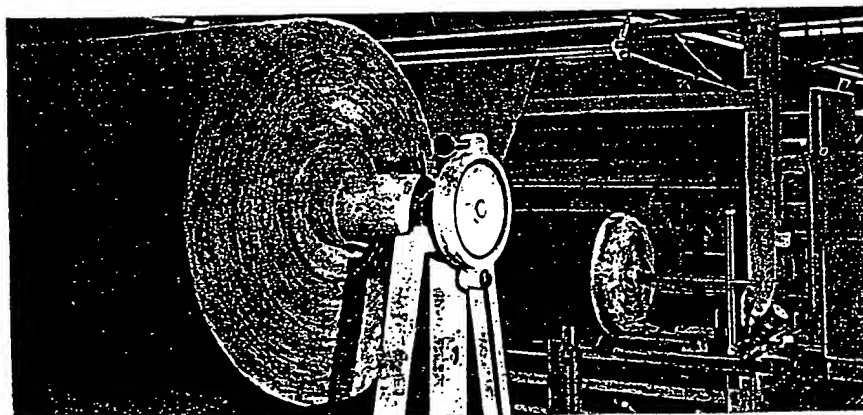
14 F

160–350

22 F

120–180

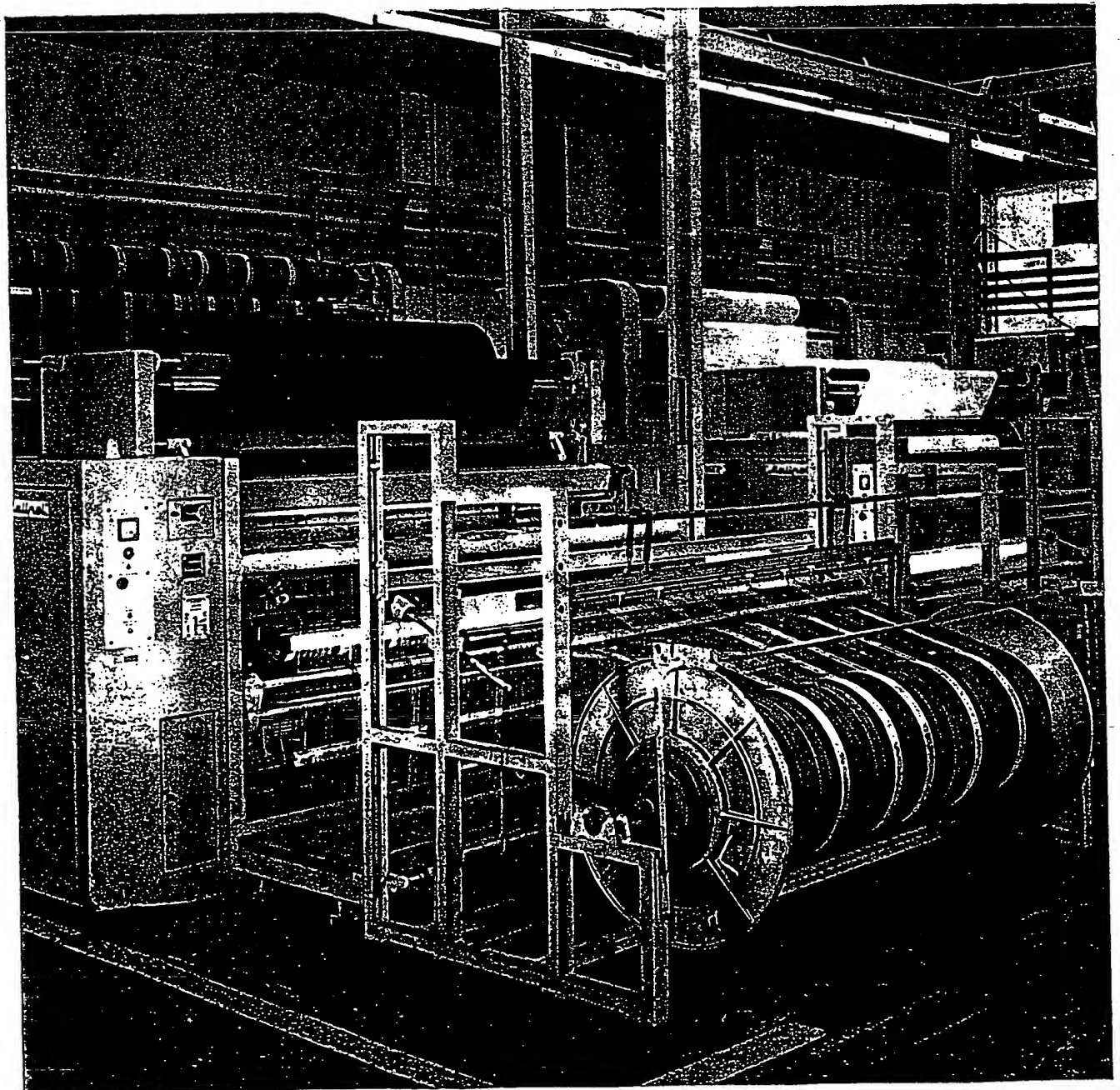
depending upon fibre material
used and web preparation

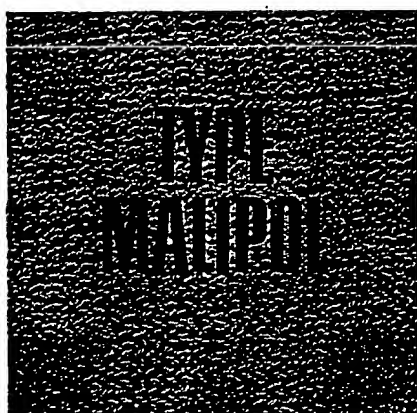


SEWING-KNITTING MACHINE

Malimo®

type Malipol N 1600





A backing fabric or foamed plastic material in lap form is fed to the MALIMO sewing-knitting machine. Woven fabrics, knit fabrics, Malimo or Maliwatt stitch-bonded fabrics, and foamed plastics are suitable for this purpose.

Withdrawn from the beam stand or creel and led via a yarn feeding device, the pile threads are fed to the stitching area. There the pile thread is placed over the pile sinkers in interlocking chain stitch by means of the stitch-bonding elements and stitched into the backing fabric. In this way pile loops (tufts) are formed on the face and stitches on the reverse side. Both the tuft side and the stitch side can be made use of for further processing and application.

Utilizing the working speed of the machine and the outstanding economy of the sewing-knitting technique, fleece and pile articles can be produced by the MALIMO sewing-knitting machine, type Malipol, which are well accepted in the fields of beach and leisure-time wear, imitation furs and lining plush production; and as interior decoration fabrics as well.

The pile loops formed in the stitch-bonding process can, according to the application of the fabric concerned, maintain their form or be cut, clipped, or raised.

Applications of the MALIMO sewing-knitting machine, type MALIPOL:

- Terry fabrics
- Beach and leisure-time wear
- Overcoatings
- Upholstery materials
- Lining and upholstery plushes
- Imitation furs
- Floor coverings
- Articles similar to knit goods

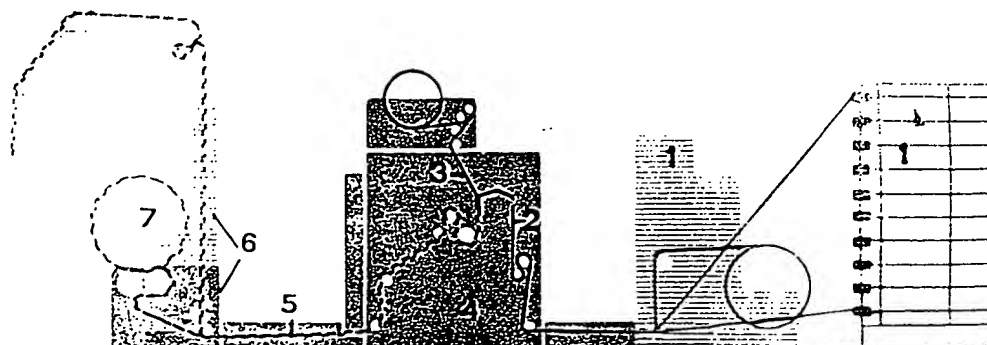
Special advantages:

- High output in the manufacture of pile articles

- Good loop strength of the tufts
- High number of the tufts per inch
- The pile cutting device enables the pile loops to be cut open directly in the machine to make plush (nominal width: 1600, gauge: 10 F)

Diagram of fabric passage
MALIMO sewing-knitting machine,
type Malipol

- 1 Beam stand or creel
- 2 Pile thread
- 3 Backing fabric
- 4 Sewing-knitting machine
- 5 Malipol fabric
- 6 Fabric winding-up or plaiting mechanism



Examples for the application
of MALIMO sewing-knitting machines,
type Malipol,
and performance parameters that can be obtained

Article	Gauge F	Stitch length, mm	Pile sinker height, mm	Pile thread, tex	Backing fabric	Weight, g/m ²	Speed r.p.m.	Actual output, m/h
Terry fabrics for beach and leisure- time wear	10	1.6	4	30 x 2 Cotton	Cotton fabric	370	1200	75
Imitation furs	10	1.5	4	100 PAN-F	PA-S fabric	450	1100	70
Shoe lining fabrics	10	2.0	3	140 VI-F/wool	VI-F- Malimo stitch- bonded fabric	540	800	80



**Technical data
of the
MALIMO sewing-knitting machine,
type Malipol**

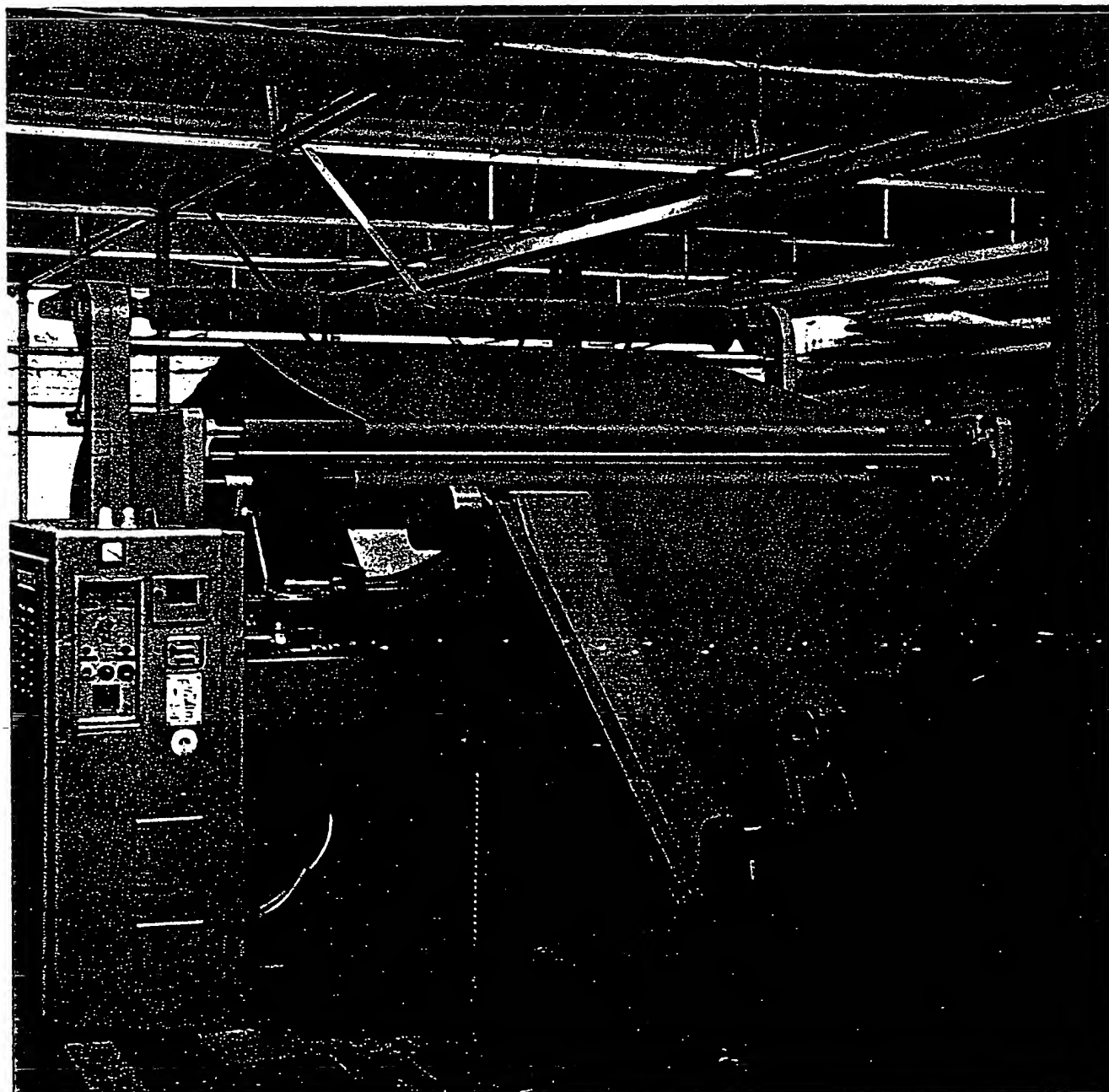
Nominal width N	1600	2400
Model	14010	
Maximum working width, mm	1700	2500
Minimum working width, mm	adjustable in steps of 25 mm	
Gauge F, needles per 25 mm	10, 12, 14	
Range of stitch lengths, mm adjustable in steps	0.7 ... 5.0	
Pile sinker heights, mm	1, 2, 3, 4, 5, 7, 9, 11	
Speed range, min ⁻¹ , infinitely variable	500-1500	
Space requirement, m ² , with beam stand	18	24
Connected load, kVA	4.5	6
Recommended values concerning the coarsest processible pile thread materials, in dependence upon machine gauge, (tex [Nm])	Gauge	Titre
	10 F	140 (7)
	12 F	100 (10)
	14 F	50 (20)
Producible weights, g/m ²	Depending upon pile thread materials and backing fabrics used, values between 250 and 500	

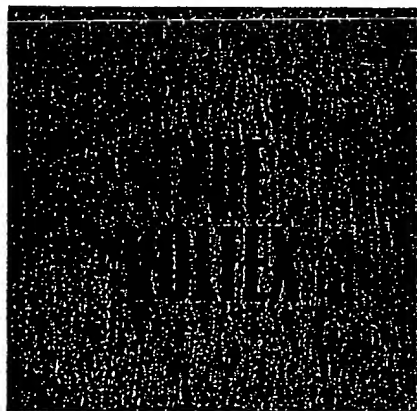


SEWING-KNITTING MACHINE

Malimo®

type Voltex N2400





A backing material in lap form is fed to the MALIMO sewing-knitting machine, type Voltex, which is always operated as an integral part of a machine system. There are no pile threads. Fibres from a continuously supplied fibre web are fed to the stitching needles and transformed into loops by stitch-bonding. In this process these fibres are placed on pile sinkers and form voluminous stitch-bonded fabrics by being intermeshed with the backing material.

A parallel-laid web weighing 10 to 30 g/m² is used.

Parallel-laid web processing necessitates the adaptation of the widths of the card sets to the width of the sewing-knitting machine. The elimination of all the

threads for pile formation bears a positive impact on the efficiency of the system, so that useful effects amounting to 85 to 90 % can be achieved under favourable conditions.

The use of a Malivlies nonwoven as a backing material for a MALIMO sewing-knitting machine, type Voltex, represents the ideal textile-technological solution. High-grade products of 100 % unspun fibrous material give evidence of the economy of this technique.

The pile loops formed in the stitch-bonding process on the MALIMO sewing-knitting machines, type Voltex, can maintain their shapes, be clipped, or raised.

The finish depends upon the kind of finished product wanted.

The application of the machine is demonstrated by the following examples:

- Imitation fur
- Linings for shoes and clothing
- Overcoatings
- Upholstery plush and plush for children's plush toys
- Floor coverings
- Covers and blankets

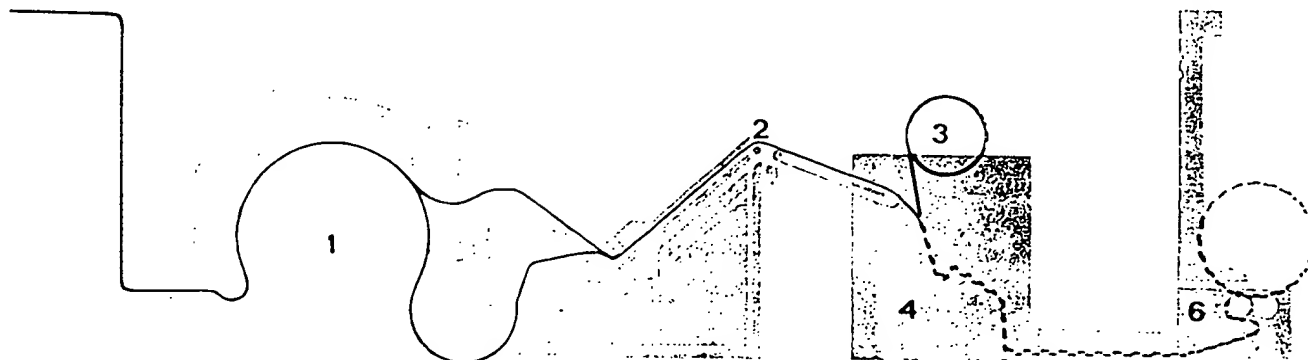
Special advantages:

- Use of 100 % fibrous material for pile formation

- Continuous processing procedure
- Reduction of raising passages in the fur and plush production
- Reduction of space requirement, power consumption, and labour force.

Diagram of fabric passage
MALIMO stitch-bonding machine,
type Voltex

- 1 Fibre web former
- 2 Web transfer
- 3 Backing fabric
- 4 Sewing-knitting machine
- 5 Voltex stitch-bonded fabrics
- 6 Fabric winding-up mechanism



Examples for the application
of MALIMO sewing-knitting machines,
type Voltex,
and performance parameters that can be obtained

Article	Gauge F	Stitch length, mm	Pile sinker height, mm	Web material	Backing fabric	Weight, g m ⁻²	Speed r.p.m	Actual output, m h
Blankets	10	1.2	7	PAN-F	PAN-F PE-F (Malivlies)	500	900	45
Imitation fur	14	1.3	7	PAN-F	VI-F fabric	550	700	40
Plush for children's toys	14	1.4	7	PAN-F	VI-F fabric	480	700	45

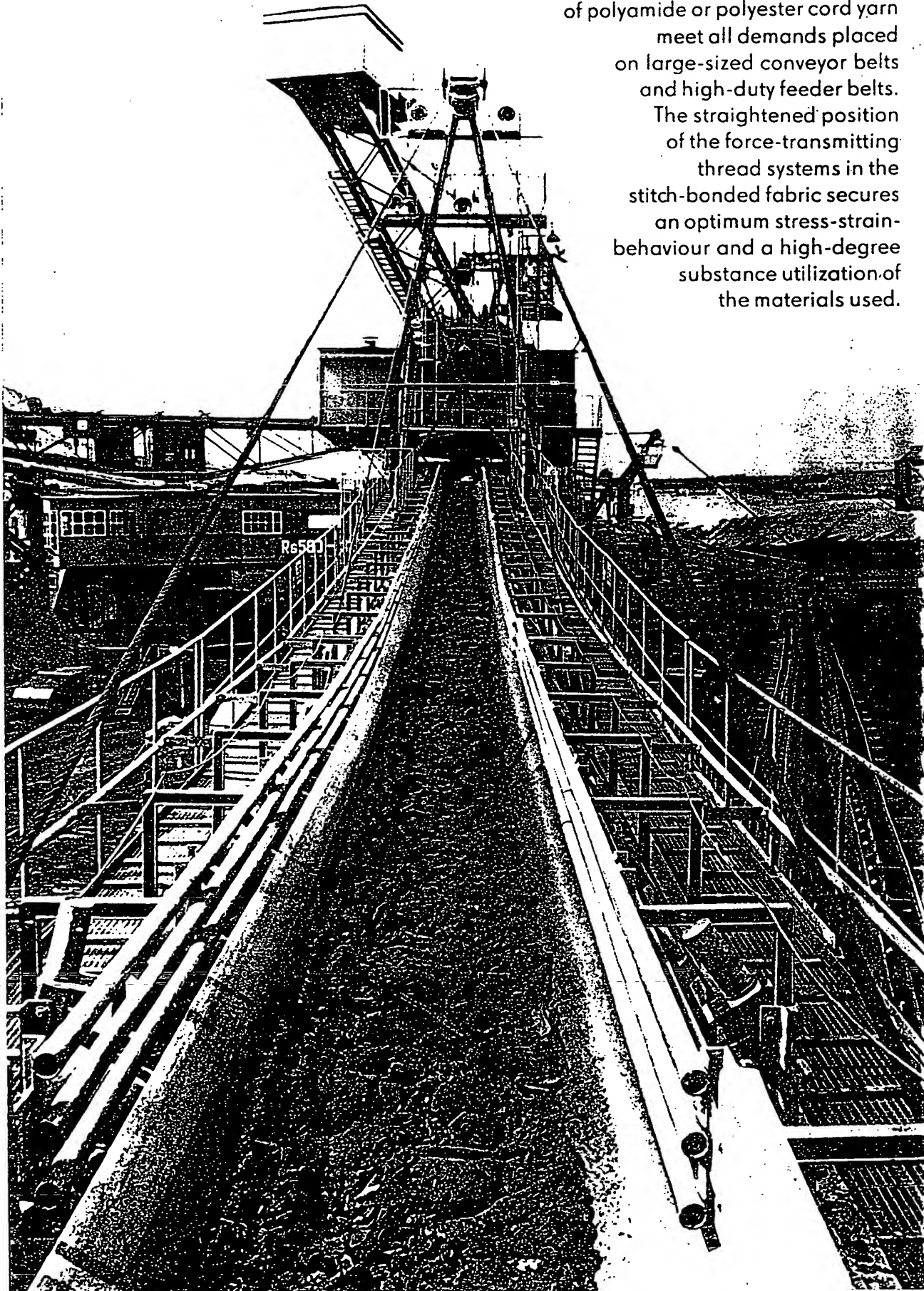


**Technical data
of the
MALIMO sewing-knitting machine,
typ Voltex**

Nominal width N	1600	2400
Model	14010	
Maximum working width, mm	1700	2500
Minimum working width, mm	Variable at choice	
Gauge F, needles per 25 mm	7, 10, 12, 14	
Range of stitch lengths, adjustable in steps	0.7–5.0	
Pile sinker heights, mm	1, 2, 3, 4, 5, 7, 9, 11, 15, 20, 23	
Speed range, min ⁻¹ , infinitely variable	500–1000	
Space requirement, m ² individual machine	12	16
machine system (with one 2-card set)	95	105
Connected load, kVA (without card set)	6	6
Processible fibrous materials	Synthetic and natural fibres as well as their blends 0.34–1.7 tex (3–15 denier), staple length: 60–120 mm depending upon gauge and web preparation	
Producible weights, g/m ²	300–800 depending upon machine parameters, fibrous material, and backing fabric used	



MALIMO interlining fabrics made of polyamide or polyester cord yarn meet all demands placed on large-sized conveyor belts and high-duty feeder belts. The straightened position of the force-transmitting thread systems in the stitch-bonded fabric secures an optimum stress-strain-behaviour and a high-degree substance utilization of the materials used.



In the G.D.R. approximately
45 per cent of all the decoration
fabrics produced are manufactured
on MALIMO sawing and finishing
machines.

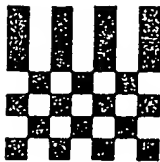
Upholstering materials and textile
floor coverings supplement
the assortment of interior
decoration textiles.



Symposium
and
produced
sewing
machine
with
the
best
results
possible

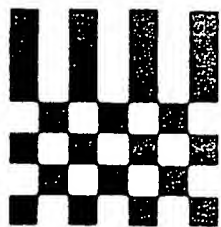


Figures, dimensions, weights,
and technical data are given
without guarantee due to
continual design improvements.
The text of the offer
or confirmation of order
is valid.



VEB TEXTIMA FORSCHUNG MALIMO
KARL-MARX-STADT
KOMBINAT TEXTIMA
DDR - 9048 Karl-Marx-Stadt
Annaberger Straße 97/99
Telefon: 57070, Telex: 7100

EXPORTEUR:
UNITECHNA
AUSSENHANDELSGESELLSCHAFT M.B.H.
DDR-108 BERLIN, MOHRENSTRASSE 53/54
DEUTSCHE DEMOKRATISCHE REPUBLIK
TELEFON: 2240, KABEL: UNITECHNA, TELEX: 1148 61

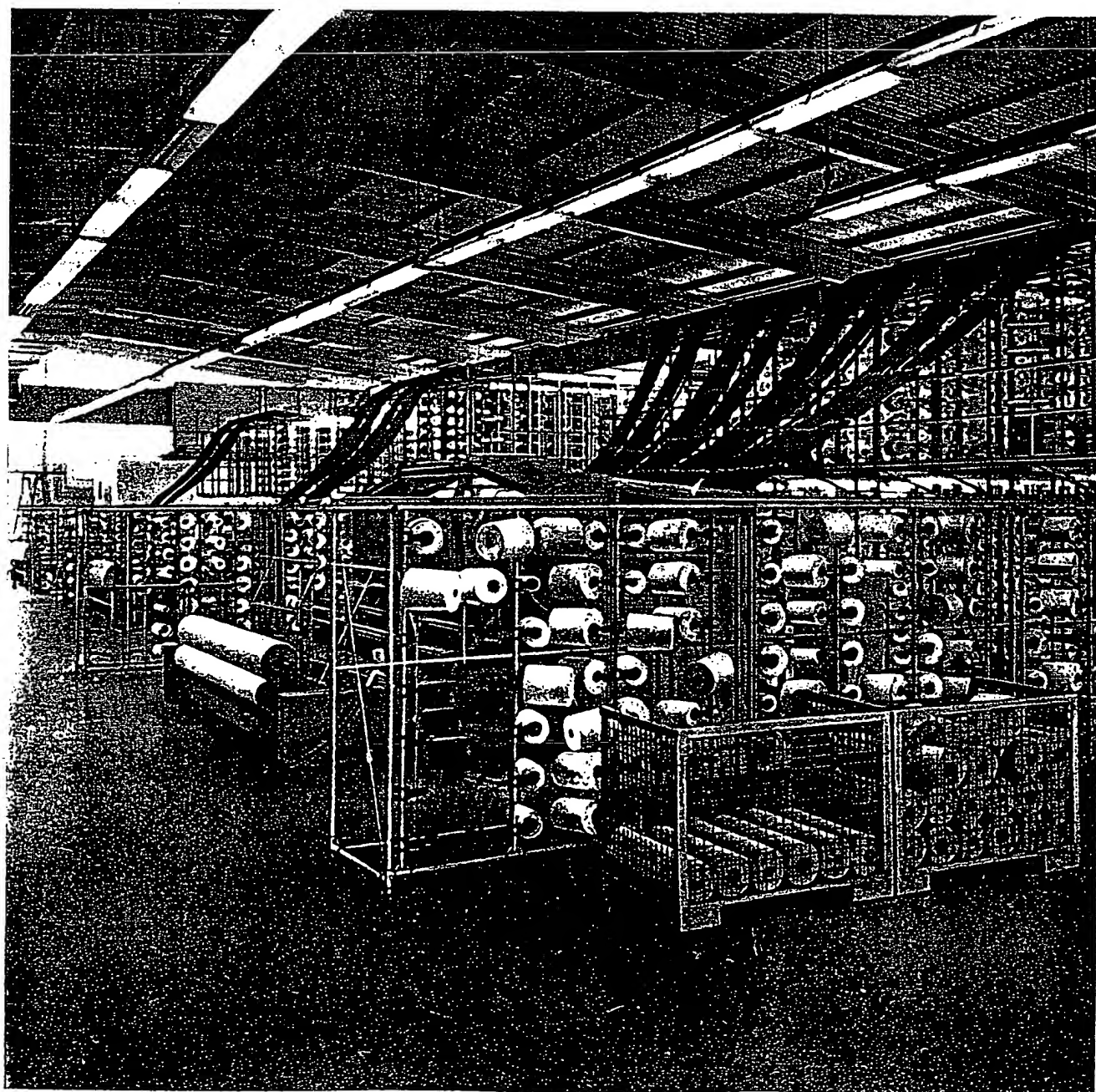


TEXTIMA®
VEB NÄHWIRKMASCHINENBAU „MALIMO“ KARL-MARX-STADT
KOMBINAT VEB WIRKMASCHINENBAU

SEWING-KNITTING MACHINES *Malimo*® TYPE SCHUSSPOL

MODEL 14010 NOMINAL WIDTH 1600 AND 2400

MODEL 14011 NOMINAL WIDTH 3600



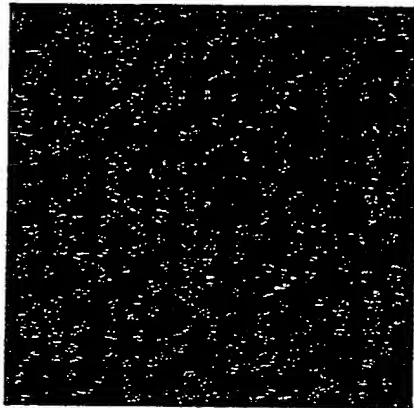


Fig. 1

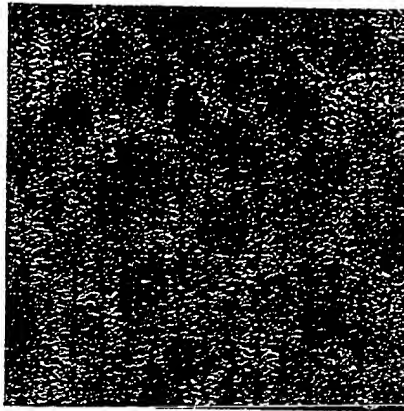


Fig. 2

Fig. 1 Schußpol stitch-bonded fabric melange

Fig. 2 Schußpol stitch-bonded fabric printed

Malimo®

Sewing-Knitting Machines MALIMO®

Type Schußpol

Model 14010 N 1600 and 2400

Model 14011 N 3600

are used for the forming of one-sided pile fabrics, particularly for the forming of floor covering materials with a pile of synthetics yarn, as well as terry cloth and upholstery fabrics.

The stitching yarn intermeshes at open plain chain stitch to bond the pile yarns to the sheet of weft yarns, the pile yarns being laid over pile wires with the aid of a second guide bar.

The pile yarns intermesh by weft lapping under every two needles. The high-grade pile material constitutes the face of the stitch-bonded cloth as the Schußpol method implies.

Owing to the pile yarns stitched on to the sheet of weft yarns being fed, prefabrication of a backing cloth can be omitted. Stitching yarn supply is off beams. The stitching yarn beams are held in a beam stand.

In dependence on the floor space conditions and the technical and technological conditions prevailing in industry, the pile yarn

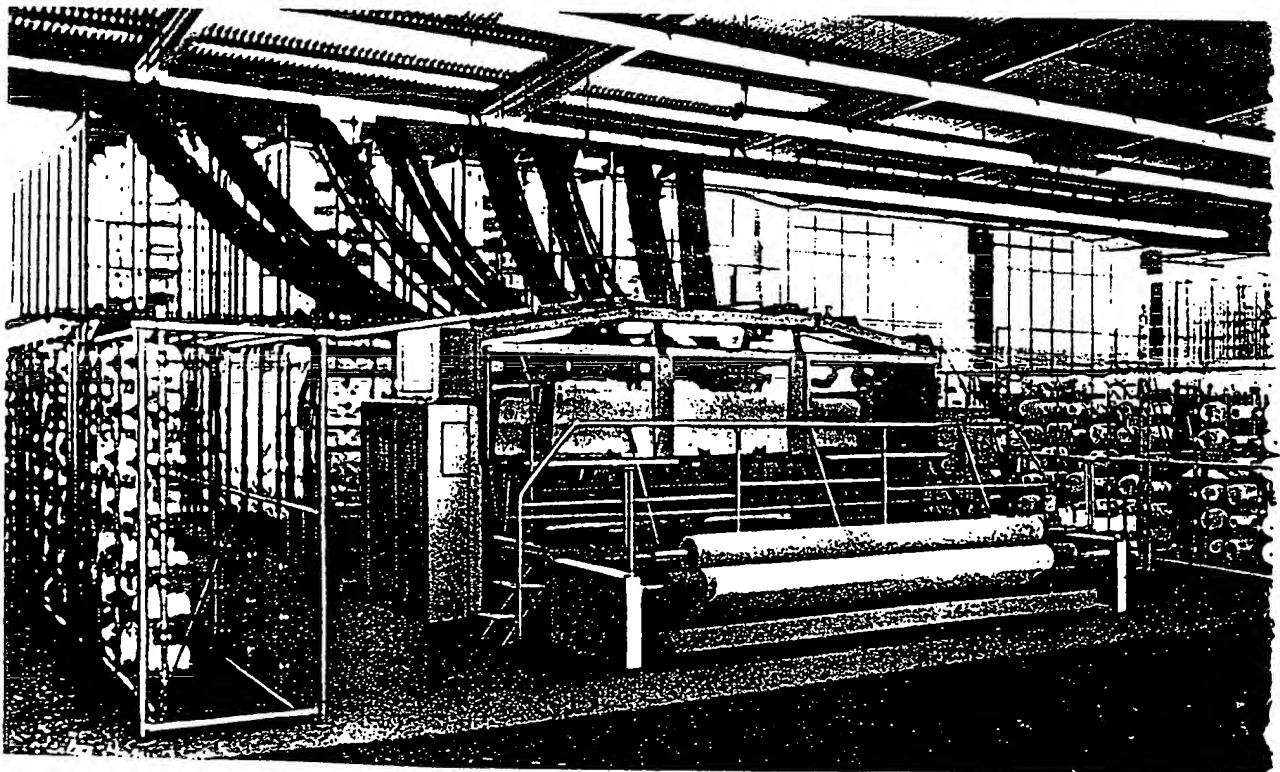
can be either from beams or from bobbins.

A special advantage can be derived : using a creel with tubular yarn guide magazine creeling.

Such creels for the creeling of conical cylindrical crosswound bobbins have designed as flat creels and as multi-creels, respectively. They are equipped little yarn guiding tubes to guide each the pile threads between the bobbin the machine in a little tube.

Threading of the pile threads into the tubes is carried out with compressed

Fig. 3 Sewing-Knitting Machine MALIMO® Type Schußpol N 3600 Model 14011



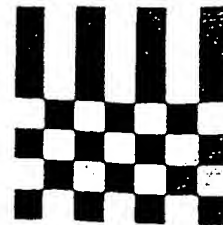


Fig. 4 Stitch-bonding elements - Type Schußpol

- 1 closing wire
- 2 sliding needle
- 3 knocking-over sinker
- 4 stitching yarn guide
- 5 tubular pile yarn guide
- 6 pile sinker
- 7 pile yarn
- 8 stitching yarn
- 9 weft yarn
- 10 Schußpol stitch-bonded fabric

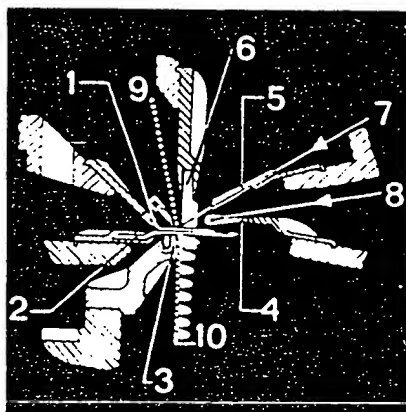


Fig. 4

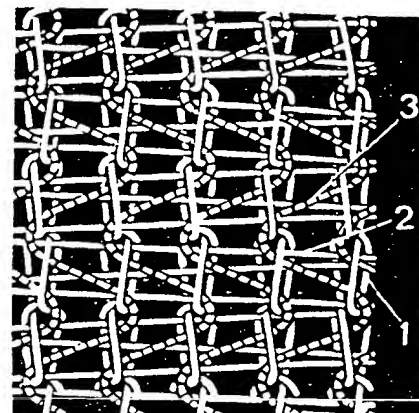


Fig. 5

Fig. 5 Diagrammatic representation of the appearance of the Schußpol fabric

- 1 stitching yarn
- 2 weft yarn
- 3 pile yarn

Pile yarn tension is regulated with the aid of infinitely adjustable yarn brakes arranged on the creel-sided end of the yarn guide tubes. Centre distances of the winding-off points in the creel are 610 mm horizontally and 260 mm vertically.

The creel features segment construction and can be varied accordingly. One segment of the creel has 126 (112) creeling points. Each creeling point has one skewer in addition for spare bobbin creeling.

Multi-stage creels with yarn guide tubes have a platform for yarn storage for the upper stage.

For the feeding of the weft yarns coarse yarn bobbin creel segments are arranged on either side of the machine. Each segment has 21 creeling points for magazine creeling, the bobbins being creeled at centre distances of 220 mm.

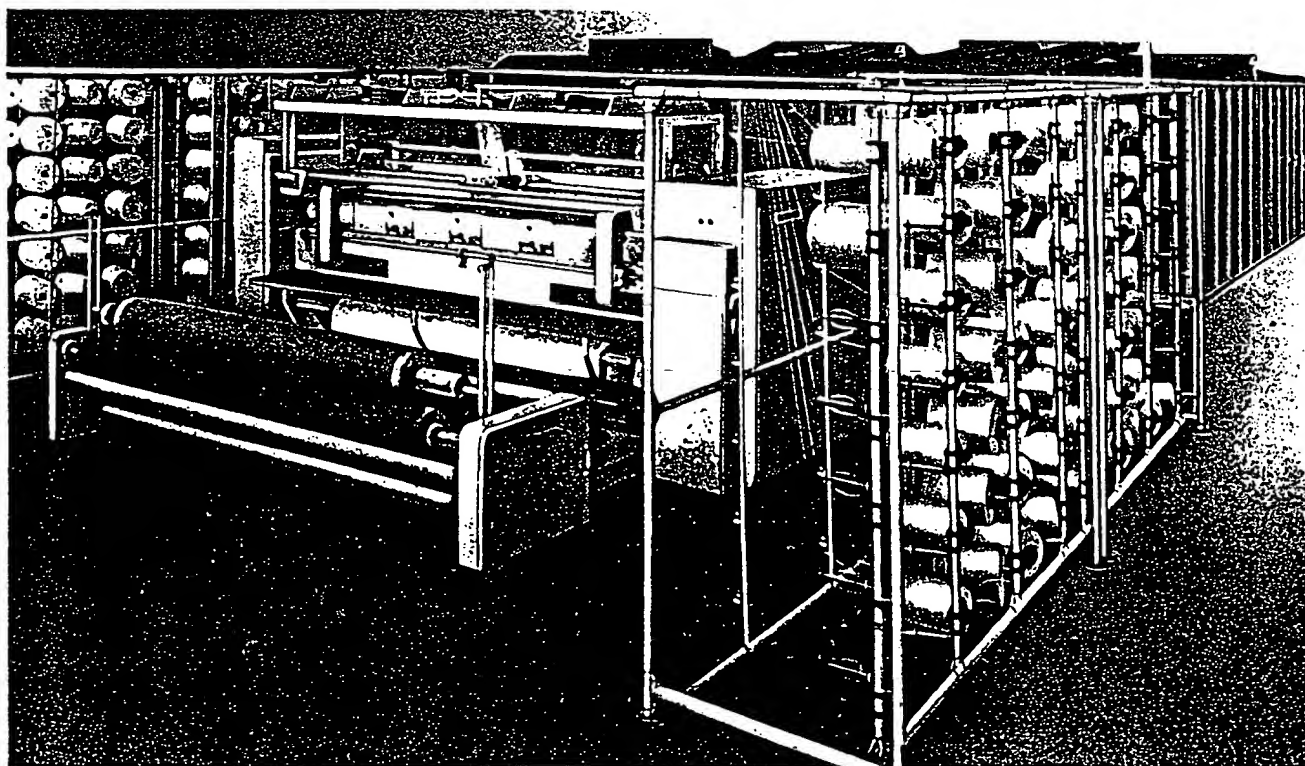
The arrangement mentioned of the individual yarn systems ensures trouble-free winding-off at constant yarn tension.

Advantages offered by the machine and the method:

■ Optimum design of the yarn guiding elements in the stitch-bonding zone enables the working-up of untwisted textured yarn and open-end spun yarn for the pile threads and warrants a large output of top quality stitch-bonded cloth

■ Clearly arranged operating, indicating and controlling instruments; infinitely variable control of machine speed and delivery rates of the pile yarn and stitching yarn systems ensure ease of operation

Fig. 6 Sewing-knitting machine MALIMO® Type Schußpol N 2400 Model 14010



Technical and technological parameters

■ Stepless adjustment of the yarn brakes in the pile yarn system for the equalization of variations in yarn tension (each yarn is individually braked in the creel with tubular yarn guides)

■ Magazine creeling and the use of large-size bobbins in the pile yarn and weft yarn systems for the elimination of technologically conditioned down times other than those required for beam changing result in a high efficiency of the machine

■ Control of all yarn systems through mechanical-electrical stop motion detection installation with optical indication

■ Patterning possibilities by the use of yarns different in colours and of mouliné yarns in the pile yarn system, and by printing designs.

■ Highly uniform number of tufts per unit area of the pile face and good elastic recovery of the pile have qualified the Schußpol fabric as a highly representable fabric whose utility value will meet the highest pretensions

■ Excellent capillary strength and tuft bind in the pile face of the fabric prevent fibre tuft formation, abrasion and felting of the face of the cloth.

Good cleaning behaviour and prolonged use are the results of these properties

■ The Schußpol stitch-bonded fabric has a strong face which is characterized by the properties mentioned and is excellently suitable for sharp contours in printed designs

■ In the pre-finished state, i.e. after the tufts have been bonded with a back finish, the Schußpol fabric can be subjected to any coating process known

Owing to alterations in construction carried out currently all illustrations, measures, weights, and technical data are not binding.
Only the text of the offer or the confirmation of order is valid.

Nominal width	N 1600	N 2400	N 3600
Working width (mm) max.	1600	2400	3600
Working width (mm)	1050-1600 1650-2400 2450-3600 adjustable in steps of 50 mm		
Speed range (r.p.m.)	400-750 350-600 depending on the gauge of the machine and the quality and nature of the yarn		
Machine gauge (needles to 25 mm)	5 F, 7 F, 10 F	5 F, 7 F	
Height of pile sinker (mm)	1, 2, 3, 4, 5, 7		
Range of stitch lengths (mm)	0.7...5.0		0.55-5.0 adjustable in steps
Practical stitch lengths for the forming of floor covering materials (mm)	2.5...3.5		
Connected load (kW)	4.5	6.0	8.0
Weight of the machine (kg)	6750	8600	12450
Floor space required (m²) including the space for operation and preparation Sewing-knitting machine, creel with tubular yarn guide (multi-stage design) Sewing-knitting machine, creel with tubular yarn guide (flat design)	40 — 105	55 145 190	90 165 220
Efficiency (%) in dependence on machine gauge, kind and quality of the yarn, production organization and climate of the production room	40-65		
Output (metres/h) in dependence on machine speed, stitch length and efficiency	30-75		

VEB NÄHWIRKMASCHINENBAU, MALIMO' KARL-MARX-STADT

Kombinat VEB Wirkmaschinenbau · Deutsche Demokratische Republik
90 Karl-Marx-Stadt, Annaberger Str. 97/99, Telefon 5 70 70 · Telex 7100

UNITECHNA

EXPORTER:

AUSSENHANDELSGESELLSCHAFT M. B. H.
DDR - 108 BERLIN, MOHRENSTRASSE 53/54
GERMAN DEMOCRATIC REPUBLIC
TELEFON: 2240, KABEL: UNITECHNA, TELEX: 112461

